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PREDICTORS OF SEXUAL OFFENDER RECIDIVISM: A META-ANALYSIS

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The views expressed are those of the authors and are not necessarily those of the Ministry of the Solicitor General of Canada.

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Abstract

This review provides a quantitative summary of recidivism risk factors for sexual offenders. Based on 61 different data sets, approximately one third of the 165 predictor variables were significantly related to recidivism ($p < .05$) with correlations of .10 or greater. Sexual offense recidivism was best predicted by measures of sexual deviance (e.g., deviant sexual preferences, prior sexual offenses), and, to a lesser extent, general criminological factors (e.g., age, total prior offenses). The predictors of nonsexual violent recidivism and general recidivism were similar to those recidivism predictors found among nonsexual criminals. No single factor was sufficiently related to recidivism, however, to justify its use in isolation. There remains a need for research to identify changeable, dynamic risk factors.

Executive Summary

Sexual victimization is a serious social problem. Given the high rates of sexual victimization among women and children (Johnson & Sacco, 1995; Peters et al., 1986), there must also be a significant number of sexual offenders. A large number of sexual offenders raises important public policy questions concerning how such offenders should be managed by the mental health and criminal justice systems. Decisions concerning the management of individual offenders are often based on based on assessments of dangerousness.

It is difficult to estimate the overall recidivism rates of sexual offenders since many offenses remain undetected. Comparisons of the recidivism rates of different types of offenders, however, can yield important information about relative recidivism risk (Furby, Weinrott & Blackshaw, 1989). The main question addressed in the present report was the following: compared to other sexual offenders, what factors increase or decrease their risk for recidivism? The question was addressed through a quantitative summary of a large number of follow-up studies.

To be included in the review, the study had to a) identify a group of sexual offenders, b) include a follow-up period, c) compute the relationship between some initial characteristic and subsequent recidivism, d) record sexual, nonsexual violent, or any recidivism, and e) report sufficient statistical information. Studies were identified through searching computerised data bases, examining the reference lists of available articles, and by contacting established researchers in the field.

As of our deadline of December 31, 1995, our search yielded 87 usable documents (published articles, government reports, unpublished program evaluations, raw data sets, etc.). These 87 articles reported on 61 different data sets from six different countries. Half of the studies were produced after 1989. The median sample size was 198 (mean of 475, range of 12 to 4,428), and the median follow-up period was four years. In total, the report examined 28,972 sexual offenders.

Two raters coded each study using a standard set of categories and coding rules. We examined all predictor variables except treatment outcome. Treatment outcome with sexual offenders was considered a sufficiently important topic to justify separate reviews (see Hall, 1995). A further restriction was that each predictor variable had to be examined in at least three independent studies. Overall, the review examined 69 potential predictors of sexual recidivism, 38 predictors of nonsexual violent recidivism, and 58 predictors of general (any) recidivism.

The findings of each study were transformed into a common index of predictive accuracy: r. This measure can range between -1 and +1. When r equals zero, there is no relationship between the variables. When r is -1 or +1, there is perfect prediction. A positive value of r indicate that offenders with the characteristic are more likely to recidivate, whereas negative values indicate that recidivism is less likely. In general, the value of r can be interpreted as the percentage difference in recidivism rates between those offenders who have a particular characteristic and those offenders who do not (Farrington & Loeber,

1989). The values of r were adjusted for differences in recidivism baserates and then averaged across studies.

Given the average 4-5 year follow-up period, the overall recidivism rate was 13.4% for sexual offenses (n = 23,393), 12.2% for nonsexual violent offenses (n = 7,155) and 36.3% for any recidivism (n = 19,374). Rapists were much more likely to recidivate with a nonsexual violent offense (22.1%) than were child molesters (9.9%). These averages should be considered cautiously, however, since they were based on diverse studies and many sexual offenses remain undetected.

The strongest predictors of sexual recidivism were characteristics related to sexual deviance, and, to a lesser extent, general criminological variables. These predictors included phallometric assessments of sexual preferences for children (r = .32), prior sexual offenses (.19), age (-.13), early onset of sexual offending (.12), any prior offenses (.13), and never being married (.11). The risk of recidivism was lower for those offenders who were related to, or who knew, their victims (family members < acquaintances < strangers). Those offenders who failed to attend or who dropped out of treatment were higher risk than those who successfully completed treatment. Although based on a limited number of studies, other interesting predictors included a negative relationship with their mother, personality disorders, and the MMPI Masculinity-femininity scale.

Among sexual offenders, nonsexual recidivism was predicted by the same variables that predict recidivism among nonsexual criminals (Andrews & Bonta, 1994; Champion, 1994). Both nonsexual violent recidivists and general recidivists tended to be young, single, have antisocial/psychopathic personality disorders, be of a minority race and have a history of prior violent and nonviolent offenses. Rapists recidivated nonsexually more often than did child molesters. Incest offenders were lower risk than other sexual offenders for nonsexual recidivism.

The high statistical power generated by the meta-analysis also allowed for the identification of factors that were not related to recidivism. Sexual offense recidivism was unrelated to having a history of sexual abuse as a child, substance abuse, and general psychological problems (anxiety, depression, low self-esteem, etc.). General psychological problems were also unrelated to nonsexual recidivism. When comparing the findings of the meta-analysis to other research (McKibben, Proulx & Lusignan, 1994), it appears that extent to which sexual offenders are distress does not predict recidivism, but sexual offenders appear to react deviantly when distress.

Although many individual factors were related to recidivism, the relationships tended to be modest (.10 to .20 range). Even the strongest predictors, such as deviant sexual preferences or prior sexual offenses, were not sufficiently reliable to justify their use in isolation. The next logical question was how well recidivism could be predicted by combinations of risk factors. In general, clinical assessments performed poorly (.06 to .14) in comparison to statistical risk procedures (.42 to .46). The statistical risk procedures, however, should be considered to overestimate predictive accuracy since they have yet to be replicated on other samples.

The report concludes with suggestions on how to improve risk assessments of sexual offenders. Almost all the risk factors were historical (e.g., prior offenses) or extremely stable (e.g., personality disorders); consequently, there remains a need to identify changeable, dynamic risk factors. These factors could be used to assess changes due to treatment and to predict when offenders may recidivated. Research to identify dynamic risk factors may require improved assessment procedures and different designs than those reviewed in the current report.

Prediction of sexual offender recidivism:

A meta-analysis

Sexual victimization is a common event (Johnson & Sacco, 1995; Koss, 1993; Peters, Wyatt, & Finkelhor, 1986). Based on victimization surveys, approximately one in ten males and one in five females report being sexually assaulted as children (Peters et al., 1986). Between 10% and 20% of women report being the victim of sexual assault as adults (using criminal code definitions)(Johnson & Vacco, 1995; Koss, 1993). Such surveys suggest that in addition to the large number of victims, there must also be a significant number of sexual offenders. Carefully designed epidemiological studies are unavailable, but studies using convenience samples (e.g., university students, hospital staff) typically find that 10% to 25% of men admit to sexually assaulting women or children (Hanson & Scott, 1995; Lisak & Roth, 1988; Templeman & Stinnett, 1991).

The large number of sexual offenders raises important public policy questions concerning how such offenders should be managed by the mental health and criminal justice systems. Some jurisdictions have opted for indefinite, preventative detention of their most dangerous sexual offenders (Anderson & Masters, 1992). Most sexual offenders, however, are managed with some combination of incarceration, community supervision, and specialized treatment (Knopp, Freeman-Longo & Stevenson, 1992; The Management, 1990). The public policy/legal decisions concerning the management of individual offenders are often guided by the expert testimony of mental health professionals. An important aspect of such expert testimony are clinical assessments of dangerousness.

The assessment of dangerousness of sexual offenders requires information concerning the overall recidivism rate of sexual offenders and information about those factors that increase or decrease a particular sexual offender's recidivism risk. It is difficult to specify a single recidivism rate for sexual offenders since such rates vary with the different definitions of recidivism. Recidivism rates will be lower for narrow definitions (e.g., repeat the same offense) than for broad definitions (e.g., any reoffense). Recidivism rates will also increase with the length of the follow-up period. Consequently, statements about recidivism rates have little meaning without specifying the definition and follow-up period.

The most serious problem with estimating overall recidivism rates, however, is that a substantial proportion of sexual offenses remain undetected. Comparisons between police statistics and victimization surveys indicate that most sexual offenses, particularly offenses against children, never come to official attention (Bonta & Hanson, 1994). It is also implausible to expect that the offenders themselves will provide thorough accounts of their undetected sexual crimes. Consequently, any empirical estimates of sexual offenders' recidivism rates should be considered underestimates.

Information concerning sexual offenders' relative risk (as opposed to their absolute risk) is more tractible to empirical investigation. By assessing sexual offenders on some characteristics and then recording their subsequent recidivism, it is possible to identify factors that differentiate the recidivists from the nonrecidivists.

Clinicians interested in empirically-based risk assessment can then use these identified factors to estimate the relative recidivism risk of similar offenders.

Criminological researchers have made an important distinction between static and dynamic risk factors (Andrews & Bonta, 1994; Bonta, 1996; Jones, 1996). Static factors, such as age and offense history, predict recidivism, but are immutible to outside influences. In contrast, dynamic risk factors (or "criminogenic needs"), such as criminal attitudes and criminal associates, are potentially changeable. An important characteristic of dynamic risk factors is that reductions in such factors are associated with reduced recidivism (Bonta, 1996). Static factors are useful for making assessments of an offender's overall risk level. Knowledge of dynamic factors, however, is required to identify targets for intervention, assess changes in risk (e.g., benefit from treatment), and predict the timing of reoffenses.

Previous reviews of sexual offender recidivism have been limited to a narrow range of predominantly static risk factors (Furby, Weinrott & Blackshaw, 1989; Hall, 1990; Quinsey, Lalumière, Rice & Harris, 1995). Hall's (1990) review was primarily concerned with the identification of sexual offenders, but he did review a small number of recidivism studies. He concluded that there were "relatively small" differences in recidivism rates between the various offender types. Furby et al. (1989) similarly devoted a small portion of their review to recidivism risk predictors. They stated that "by far the best sources of data for comparing different offender types are individual studies whose samples include more than one type and whose results are presented separately for each type" (p. 26). Unfortunately, they were only able to locate five such studies, from which they tentatively concluded that child molesters had lower recidivism rates than did rapists or exhibitionists and that men who molest boys may be higher risk than those who molest girls.

Quinsey, Lalumière et al. (1995) were able to locate additional studies that compared the recidivism rates of different types of sexual offenders (see also Quinsey, 1984, 1986). In contrast to Furby et al. (1989), Quinsey, Lalumière et al. (1995) concluded that the sexual offense recidivism rates were similar for rapists and child molesters. Quinsey, Lalumière et al. (1995) did report, however, that a number of characteristics were associated with recidivism risk. Boy-victim child molesters were found to be higher risk than men who molested extrafamilial girls, who, in turn, were higher risk than incest offenders. For both rapists and child molesters, those with prior sexual or nonsexual offenses recidivated more frequently than those without prior offenses. They also concluded that laboratory assessed deviant sexual interests was related to recidivism. This latter finding is important since it was the only identified risk factor that is potentially changeable (dynamic).

Quinsey, Lalumière et al. (1995) have provided the most thorough recent review, but they still only focussed on a limited number of variables and a modest number of studies (10 to 15 different data sets). As well, little information was provided concerning the relative importance of the various risk factors. Such limitations are to be expected in any purely narrative review. It is difficult to summarize

the magnitude of findings across a large number of studies without resorting to numbers.

Quantitative summaries have become a standard feature of research reviews (Rosenthal, 1995). Such quantitative reviews are often called "meta-analyses" since they statistically analyze the statistics reported by other researchers (e.g., Hedges & Olkin, 1985; Hunter & Schmidt, 1990; Rosenthal, 1991). There are several reasons why meta-analytic techniques are useful in the review of sexual offender recidivism studies. As previously suggested, meta-analyses makes it easy to combine and organize the results of many studies. In this study we identified over 1,200 findings relating various characteristics of sexual offenders to recidivism; the sheer volume of such information would overwhelm any attempt at narrative review.

Another important feature of meta-analyses is that they can provide sufficient statistical power to detect medium-sized and small effects. By pooling the results of different studies, it is possible to obtain sample sizes (and the corresponding statistical power) that are much larger than could be found in any individual study. Meta-analytic techniques also provide numeric estimates of effects, which facilitates comparisons of the relative importances of various risk indicators. As well, by calculating the variance in the findings across studies, it is possible to examine the extent to which risk factors generalize across settings and samples.

One common concern with meta-analyses is whether it is appropriate to combine studies with different characteristics. Is it reasonable, for instance, to combine the findings of a European study from the 1940s with a recent study from California? Sexual offender recidivism studies vary considerably on their definitions of recidivism, their follow-up periods, their subject populations, and the juridictions in which they are conducted. Although such factors are potential threats to generalizability, one advantage of a quantitive review is that it is possible to test the significance of such differences. It is also possible to select studies and meta-analytic methods that maximize the comparibility of the research findings.

To facilitate comparibility, all the studies included in our meta-analysis employed the same research design. A group of sexual offenders were assessed on some characteristic(s) prior to having an opportunity to reoffend. These initial characteristics were then correlated with subsequent recidivism as recorded during a follow-up period. Retrospective studies that examined the offense histories at only one point in time were not included. Consequently, we restricted ourselves to those studies that Furby et al. (1989) consider to provide "by far the best sources of data" (p. 27).

In order to control for the diverse influences of settings and samples, the basic units of analysis were the correlations found within each study. The follow-up periods, definitions of recidivism, and criminal justice systems varied across studies, but such factors were the same for all the offenders within each study. Consequently, these study/setting factors should have limited direct impact on the correlations within studies (except through their influence on the recidivism baserate - see discussion below). Rather than being

vulnerable to the obvious main effects of factors such as follow-up time, the within-study correlations were nonetheless susceptible to moderator effects (interactions between the predictor variable, recidivism and some other variable). Determining the importance of these moderator effects was one of the empirical question addressed by our meta-analysis.

Our review attempted to include all reported predictor factors, with the exception of treatment effects. The effectiveness of treatment for sexual offenders is a sufficiently important question to justify separate reviews. There have been several recent narrative reviews (Marshall, Jones, Ward, Johnston & Barbaree, 1991; Marshall & Pithers, 1994; Quinsey, Harris, Rice & LaLumière, 1993) and at least two meta-analyses on the topic (Alexander, 1995; Hall, 1995a). Rather than contributing to the debate concerning treatment effectiveness, the present study focussed on risk assessment. Included in our study, however, were a number of treatment related variables, such as motivation to attend treatment and previous treatment failure. Some reviewers (e.g., Hall, 1995a) have included comparisons between treatment drop-outs and completers as evidence of treatment effectiveness, but we coded such comparisons under the category of "motivation for treatment".

Just as there were diverse predictor variables, the research literature contained diverse definitions of recidivism (e.g., same offense, any violent offense). As well, diverse measures have been used to assess reoffending, including self-reports, police charges, reconvictions, parole violations, and treatment program records. To simplify the analysis, these various indices of recidivism were collapsed into three categories: sexual recidivism, nonsexual violent recidivism, and any (general) recidivism. These three categories were those most frequently examined in the research literature and were considered to be the most informative.

In summary, our review asked the following question: compared to other sexual offenders, what are the characteristics that increase or decrease the recidivism risk of a particular offender? To answer this question, the results of many follow-up studies were aggregated and analyzed using quantitative techniques. The use of meta-analytic techniques allowed for the integration of a much larger number of studies and predictor variables than have been addressed in previous reviews. The analyses were intended to provide information concerning the relative importance of various risk factors, and the extent to which the same risk factors generalize to different samples and settings.

Method

Sample

Computer searches of both PsycLIT and the National Criminal Justice Reference System (NCJRS) were conducted using the following key terms: sex(ual) offender, rape, rapist, child molester, pedophile, pedophilia, exhibitionist, exhibitionism, sexual assault, incest, voyeur, frotteur, indecent exposure, sexual deviant, paraphilia(c), predict, recidivism, recidivist, recidivate, reoffend, reoffense, relapse, and failure. Additional articles were sought through the examination of the reference lists of the collected articles and those

of review articles in this area. Finally, letters were sent to 32 established researchers in the field of sexual offender recidivism requesting overlooked or as-yet unpublished articles or data.

To be included in the present analysis, a study had to meet the following criteria:

a) Include an identifiable sample of sex offenders. Studies of subjects whose index offenses were not sexual were excluded, even if some members of the group had offended sexually in the past.

b) Include a follow-up period. The recidivism had to occur after some specified point in time (e.g., release from prison, completed treatment). Retrospective studies that only examined the offenders' criminal history prior to the index offense were excluded.

c) Report on the relationship between an offender characteristic and recidivism during the follow-up period. The characteristic had to be independent of recidivism status; for example, "level of community adjustment" would not be included as a predictor variable if reoffending was considered a criteria for "poor community adjustment". As well, factors with only limited local interest (e.g., comparisons between specific hospitals, birthplace) were not coded.

d) Report recidivism information for sexual offenses, nonsexual violent offenses, or any reoffenses. Studies were excluded if they combined sexual and nonsexual violent recidivism or if they only reported on a specific type of sexual reoffenses (e.g., rapists who recidivate with rape). The decision to exclude findings that only examined one type of sexual offense was based on the assumption that there could be different predictors for different sexual offenses. Combining all sexual offenses results in a loss of information, but using a standard definition facilitates comparisons across studies.

e) Include sufficient statistical information. Studies needed to report their sample size, the rate of recidivism, as well as sufficient information to estimate r or phi (Ø). A simple statement that a variable "predicted" or "did not predict" recidivism was considered acceptable provided that there was evidence that the relevant statistical tests had been conducted, even if not fully reported.

As of our deadline of December 31, 1995, our search yielded 87 usuable documents (published articles, books, government reports, unpublished program evaluations, conference presentations, etc.). When the same data set was reported in several different articles, all the results from the same data set were considered to come from the same study. Consequently, the 87 documents were found to represent 61 different studies from six different countries (30 USA; 16 Canada; 10 United Kingdom; 2 Australia; 2 Denmark; 1 Norway). Slightly less than one half of the studies (43%) were unpublished (e.g., conference presentations, internal agency reports). One half of the studies were produced after 1989 (range from 1943 to 1995). The median sample size was 198 (mean of 475, range of 12 to 4,428).

Most of the studies examined mixed groups of sexual offenders (90%), although six studies focussed exclusively on child molesters. Of the 61 studies, 52 followed samples of adults, six followed adolescents and three examined both adolescents and adults. The offenders came from

either institutions (48%), the community (25%) or from both (27%). Nineteen studies focussed exclusively on correctional samples, 11 examined samples from secure mental health facilities, and the remainder were from a variety of other sources (private clinics, courts, mixture of sources). Approximately one half of the samples (48%) were from sexual offender treatment programs. When demographic information was presented, the offenders were reported to be predominantly Caucasian (27 of 28 studies) and of lower socioeconomic status (27 of 29 studies).

The most common measures of recidivism were reconviction (84%), followed by arrests (54%), self reports (25%) and parole violations (16%). Forty-four percent of the studies (27 of 61) used multiple indices of recidivism. The most common sources of recidivism information were national criminal justice records (41%), state or provincial records (41%), records from treatment programs (29%), and self reports (25%). Other sources (e.g., child protection records) were used in 25% of the studies. In 43% of the studies, multiple sources were used. In 15 studies, the source of the recidivism information was not reported. The reported follow-up periods ranged from six months to 23 years (median of 48 months; mean of 66 months).

Coding Procedure

Each document was coded separately by two raters (the two authors) using a standard list of categories and coding rules.[1] The categories for predictor variables were designed to be consistent with common usage in the research literature and to limit the repetition of information from the same study. In general, these factors could be grouped into the following general areas: a) developmental history (e.g., family problems, juvenile delinquency); b) demographic factors (e.g., age, marital status); c) nonsexual criminal history (e.g., total admissions to corrections); d) sexual criminal history (prior sexual offenses, age and sex of victims); and e) clinical assessment variables. The clinical assessment variables were further subdivided into those specifically related to sexual offending (e.g., phallometric assessments) and general psychological factors (e.g., IQ, personality disorders). Considering that the MMPI is frequently used in forensic assessments (Lees-Haley, 1992), the findings of the individual MMPI scales were reported separately.

Only one finding of a predictor variable was coded from any one study (data set). When multiple findings of the same variable were reported, we used the finding based on the largest sample size. If the sample sizes were identical, the finding with the most complete information was selected. If the descriptive detail was also equivalent, we selected the median value (or randomly selected one value if there were only two values).

When both pretreatment and posttreatment measures were reported, we used the posttreatment measures, except when the posttreatment findings were based on an insufficient number of cases. Insufficient numbers were defined as less than 30 cases or if 50% of the cases were lost when moving from the pretreatment to posttreatment data.

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[1] The coding manual is available upon request.

Index of predictive accuracy

The statistic used to index predictive accuracy was r. Since the recidivism outcome criteria was dichomotous, r translated into point-biserial correlation coefficients for linear predictors (e.g., age) and the phi coefficient for dichotomous predictors (e.g., married or not). The advantages of using r are that it is readily understood, it facilitates comparisons of the magnitude of the relationships, and the statistical procedures for aggragating rs are well documented (Hedges & Olkin, 1985; Rosenthal, 1991). The magnitude of a correlation can be interpreted as an approximation of the percentage difference in recidivism rates between those offenders who do or do not have a particular characteristic (Farrington & Loeber, 1989). For example, if the overall recidivism rate was 25% and "blue eyes" correlated .20 with recidivism, the recidivism rate for the blue eyed offenders would be 35% compared to 15% for the other offenders (.35 - .15 = .20).

Formulae for converting study statistics (F, t, significance levels) into r were drawn from Rosenthal (1991). The rs were calculated from the most direct data available. If a study reported both the raw frequencies and a chi-square, for example, the correlation was calculated from the provided frequencies. Studies that reported no significant relationship between the predictor and recidivism were assigned a r value of zero; however, if a study reported a nonsigificant relationship, but specified the direction of the relationship, then a value of r was selected randomly from between zero and the minimum possible value required for statistical significance. For five studies (Bonta & Hanson, 1995a; Hanson, Steffy & Gauthier, 1993b; Proulx, Pellerin, McKibben, Aubut & Ouimet, 1995; Reddon, Studer & Estrada, 1995; Thornton, 1995), the correlations were calculated directly from the original raw data sets using SPSS for Windows (Norušis, 1993). Some of the information from these unpublished data sets has been reported previously (Bonta & Hanson, 1995b; Hanson, Scott & Steffy, 1995; Hanson, Steffy & Gauthier, 1992, 1993a; Pellerin, Proulx, Ouimet, Paradis, McKibben & Aubut, 1996; Proulx, Pellerin, McKibben, Aubut & Ouimet, in press; Studer, Reddon, Roper & Estrada, in press).

Aggragation of findings

Two methods were used to aggregate the study findings. The first method was simply the calculation of the median r value across studies. Median values have the advantage of being easy to calculate and interpret: half the studies reported higher values and the other half reported lower values. On the other hand, median values have certain disadvantages as measures of central tendency. Firstly, statistics for estimating the variability of median values are not readily available. Such variability estimates are important for assessing the generalizability of research results across studies. As well, median values do not take into account factors that may influence the results, such as recidivism baserates and sample size. Consequently, a second method of aggragating the results (the weighted averaged r) was used as it promised to provide more accurate estimates than the median values.

The first step in computing the averaged correlations for each variable involved adjusting each correlation for differences in the recidivism baserates. Correlations decrease predictably with reductions

in variance (Ley, 1972). With dichotomous variables, such as recidivism, the variance is greatest when the proportion is .50, and decreases as the proportions approach 0 or 1 (specifically, $\sigma^2 = p(1-p)$; Hays, 1981). Consequently, the observed correlations would be expected to decrease as the recidivism rates decrease. To correct for the expected restrictions in the magnitude of correlations, each of the observed correlations were adjusted using formula 12:8 from Ley (1972):

$$r'_{xy} = [r_{xy} (\sigma_x'/\sigma_x)]/[1 - r_{xy}^2 + r_{xy}^2(\sigma_x'^2/\sigma_x^2)]^{1/2}$$

where r_{xy} is the observed correlation given the observed standard deviation of the base rate (σ_x) and r'_{xy} is the adjusted correlation assuming a common standard deviation across the studies, which, in this case, was the average standard deviation across the studies used in that analysis (σ_x'). We had initially planned to apply a similar adjustment for the difference in variability of the predictors, but there was insufficient information concerning the variance in the predictor variables to make such an adjustment worthwhile.

The resulting values of r'_{xy} were aggragated using the procedures recommended by Hedges and Olkin (1985). Each adjusted correlation was transformed into a Zr, where $Zr = 1/2\log[(1 + r)/(1 - r)]$. A weighted average of the Zr values was then calculated, with weights equal to the inverse of their variances ($n - 3$). The resulting average, Z_+, was then transformed back into an averaged, adjusted correlation - r_+.

Generalizability of findings

Hedges and Olkin's (1985) procedures were used to assess the statistical significance of r_+ as well as variability across studies. Specifically, the significant test was based on a standard normal variate using the following formula: $W = Z_+(N - 3k)^{1/2}$, where W is the value of the standard normal variate, N is the total sample size and k is the number of studies.

Variability across studies was indexed by Hedges and Olkin's (1985) Q statistic: $Q = \sum (n_i - 3)(Z_i - Z_+)^2$, where n_i is the number of subjects in each study, Z_i is the transformed correlation for each study, and Z_+ is the weighted, averaged Z. The Q statistic is distributed as a χ^2 with k-1 degrees of freedom (k is the number of studies). An individual finding was considered to be an outlier if a) it was an extreme value (highest or lowest), b) the Q statistic was significant, and c) the single finding accounted for more than 50% of the value of the Q statistic. When an outlier was detected, the results were reported with and without the exceptional case.

Results

The 61 studies provided information on a total of 28,972 sexual offenders, although sample sizes were smaller for any particular analysis. On average, the sex offense recidivism rate was low. Given the average 4-5 year follow-up period, 13.4% of the sexual offenders recidivated with a sexual offense (n = 23,393; 18.9% for 1,839 rapists and 12.7% for 9,603 child molesters). The recidivism rates for nonsexual violence was 12.2% (n = 7,155), but there was a strong

difference in the nonsexual violent recidivism rates for the child molesters (9.9%; n = 1,774) and the rapists (22.1%; n = 782). When recidivism was defined as any reoffense, the rates were predictably higher: 36.3% overall (n = 19,374), 36.9% for the child molesters (n = 3,363) and 46.2% for rapists (n = 4,017). These averages should be considered cautiously, since they are based on diverse methods and follow-up periods, and, as previously mentioned, many sexual offenses remain undetected. These global figures, nevertheless, provide the general context within which to interpret the effects of the various predictor variables.

In total, our review identified 1,235 correlations between various characteristics and recidivism. To be included in the meta-analysis, however, any particular variable had to examined in at least three independent studies. Consequently, the meta-analysis included a total of 970 usable correlations. Most of the correlations concerned sexual recidivism (472), followed by those predicting general recidivism (329), and nonsexual violent recidivism (169).

The recidivism predictors are presented separately for sexual recidivism (Table 1), nonsexual violent recidivism (Table 2), and general (any) recidivism (Table 3). (The tables are at the end of the report.) For the purpose of presentation, the predictors were grouped into the categories of developmental history, demographic factors, criminal history, and clinical assessment variables. Within each category, the variables were ordered from the strongest to the weakest predictors, based on the averaged, adjusted correlation (r_+). The most reliable findings were those for which the mean and median values were similar, the W (the test of the null hypothesis) was large, and the Q (the measure of variability) was small. It is important to remember, however, that both W and Q increase with sample size. With large samples sizes, small effects can achieve high levels of statistical signficance. In general, variables with correlations less than .10 would have limited practical utility in most settings.

Predictors of sexual offense recidivism

Three of the developmental history variables significantly predicted sexual offense recidivism: negative relationship with mother (r_+ = .16), juvenile delinquency (r_+ = .07), and an aggragate measure of general problems in the family of origin (nonsexual abuse, family disruptions) (r_+ = .08). Although statistically significant, the effects for general family problems and juvenile deliquency were so small as to have little practical significance. It was interesting to note that sexual recidivism was unrelated to reports of sexual abuse as a child (r_+ = -.01), or to a negative relationship with father (r_+ = .02).

When considering demographic information, the younger sexual offenders were more likely to recidivate than were the older sexual offenders. As well, unmarried sexual offenders were at higher risk than other offenders. None of the other demographic factors were significantly related to sexual offense recidivism. Only Maletzky (1993) found that low employment stability and low social class were risk factors. His definition of recidivism, however, was unusually broad: "treatment failure". This definition included attrition and

insufficient therapeutic change in addition to the commission of a new sexual offense.

The number of prior offenses (r_+ = .13) and admissions to corrections (r_+ = .09) were also related to sexual offense recidivism. Histories of prior nonsexual violent offenses and nonviolent offense were not significant risk factors for sexual reoffending.

Many of the factors concerning sexual criminal history were related to sexual offense reicidivism. Not surprisingly, a history of prior sex offenses increased the risk of continued sexual offending (r_+ = .19). The relationship between the victim and the offender was also an important risk predictor. Those who selected related child victims (incest offenders) were at lower risk than were other sexual offenders. Similarly, those who selected any stranger victims were at higher risk than those who victimized acquaintances (incest offenders were excluded from the stranger/acquaintance comparison). Offenders against female children were, on average, less likely to recidivate than were the other offenders (e.g., rapists, offenders against boys, exhibitionists against adult women). Conversely, offenders against boys were at slightly higher risk than other sexual offenders (r_+ = .11). Exhibitionists and rapists were also higher risk than average, although the effects were negligible (less than .10). In general, those who had committed a variety of different sexual crimes tended to be more likely to reoffend than those who restricted themselves to one specific type of sexual offense. The remaining sexual crime history variables (sexual intrusiveness, injury to victim, any child victims, etc.) showed little relationship with recidivism, even though the large samples sizes (up to 13,683) rendered some tiny effects statistically significant.

The largest single predictor of sexual offense recidivism was a sexual preference for children as measured by phallometric methods. The effect was not consistent across the studies, suggesting that some assessment procedures were better than others, but the overall effect was substantial (r_+ of .32). Our general category "deviant sexual preference" also predicted recidivism. The studies in this category used mixed definitions of deviance (rape/child molesting) or mixed methods of assessment (phallometric, self-report, unknown). Sexual preference for boys, as measured by phallometric tests, was also a significant risk predictor (.14), but was less discriminanting than the broad definition of any sexual preference for children (.32). In contrast, a sexual preference for rape was not signficantly related to sexual offense recidivism (.05).

Sexual offenders legally classified as "mentally disordered sexual offender" under various sexual psychopath laws were only slightly more likely to reoffend than other sexual offender groups (.07). Contrary to what is commonly assumed, those sexual offenders who denied their offenses were no higher risk than other offenders (average r of .02, with no significant variability). Denial was related to treatment failure in Maletzky's (1993) study, but it was impossible to tell whether denial was related only to attrition/noncooperation with treatment or to reoffending per se.

Few of the general psychological variables showed significant relationships with recidivism. A history of psychosis was a significant

risk factor ($\underline{r}$ = 25, "severely disordered"); there was, however, considerable variability among these findings, with almost all of this effect being attributible to a single study of 37 exhibitionists (Hackett, 1971). The most consistent psychological risk factor was a diagnosis of personality disorder, typically antisocial personality disorder or psychopathy. Low intelligence was also associated with recidivism, but the effect was small ($\underline{r}$ of .09). None of the general measures of distress or psychological dysfunction were related to sexual offense recidivism (e.g., depression, anxiety, social skills).

Four studies correlated individual MMPI scales with sexual offense recidivism (Davis, Hoffman & Stacken, 1991; Hall, 1988; Hanson et al, 1992, 1993b; Reddon et al., 1995). The scale most closely related to deviant sexual orientations, namely the Masculinity-Feminity scale, consistently predicted sexual recidivism ($\underline{r}$ of .27). Recidivism was also predicted by the Paranoia scale ($\underline{r}$ = .16), although there was significant variability across studies. None of the other scales correlated with recidivism. In general, the MMPI findings were consistent with the other studies that found no relationship between general psychological dysfunction and sexual offense recidivism.

Predictors of nonsexual violence recidivism

As shown in Table 2, nonsexual violent recidivism was predicted by the familiar criminological variables of prior juvenile delinquency, age (young), minority race and marital status (unmarried). As well, those with previous offenses, particularly previous violent offenses, were at greater risk for nonsexual violent recidivism.

Rapists were higher risk for nonsexual violence than were the other sexual offenders (.23), particularly the child molesters (-.16). Those who selected male victims, related victims, or young victims were at relatively lower risk for nonsexual violent reoffending. Prior sexual offenses did not predict nonsexual violent recidivism ($\underline{r}$ = .02).

The only clinical assessment variable that was significantly related to nonsexual violent recidivism was a diagnosis of antisocial personality disorder/psychopathy ($\underline{r}$ = .19). Phallometric assessment of rape preferences showed strong variability across studies (range of -.28 to .22), but was, on average, unrelated to recidivism. Caution is required in interpreting the results of the clinical assessment predictors since such factors were examined in a minimal number of studies (three or four).

Three studies examined the relationship of individual MMPI scales to nonsexual violent recidivism (Hall, 1988; Hanson et al., 1992, 1993b; Reddon et al., 1995). As would be predicted, an elevation on the Pd (psychopathic deviant) scale was a significant risk factor. Also associated with nonsexual violent recidivism were a high K scale (subtle defensiveness) and a low Social Introversion scale score. Given the significant variability in the latter two findings and the modest sample size, it is unclear whether these effect would replicate in other samples.

Predictors of general recidivism

Of the developmental factors, the strongest predictor of general recidivism was, not surprisingly, a history of juvenile delinquency ($\underline{r}$.

= .28). General recidivism was also predicted by a negative relationship with mother (.14) and by sexual abuse as a child (.10).

The same demographic factors that predicted nonsexual violent recidivism also predicted general recidivism. Sexual offenders were at higher risk for any recidivism if they were young, unmarried, and of a minority race. General recidivism was also predicted by the number of prior offenses (.23), prior violent offenses (.20), and prior admissions to corrections (.25).

The offenders' sexual criminal history was also related to general recidivism, although the effects tended to be modest with considerable variability. Those offenders who used force were more likely to reoffend than other sexual offenders, as were those with prior sexual offenses. Child molesters, particularly incest offenders, were recidivists less frequently than were the other sexual offenders. Rapists and exhibitionists were at greater risk statistically, although the effects were of little or no practical significance (average $\underline{r}$s of .05 and .04, respectively).

Those offenders who were unmotivated to attend treatment, or who failed to complete treatment, were at greater risk for general recidivism than those who completed treatment ($\underline{r}$ = .14). It was interesting to note that having received treatment prior to the current offense was associated with reduced general recidivism (-.07, $p < .01$). Although there was significant variability, classification as a "mentally disordered sexual offender" was also associated with reduced general recidivism (-.10). Alcohol use during the offense was, on average, related to general recidivism, but the effect was based on a single, large study (Motiuk & Brown, 1993). Those offenders who denied committing a sexual offense were at greater risk for recidivating with a nonsexual crime (.12), although, again, there was significant variability in the findings.

The general psychological variables tended to be unrelated to recidivism, with the exception of personality disorders (specifically antisocial personality disorder/psychopathy) and alcohol abuse. None of the MMPI subscales were significantly associated with general recidivism.

Combined risk scales

The analyses to this point have examined the predictive power of individual risk factors. The next question is how well can recidivism be predicted using combinations of variables. Risk scales for sexual offenders have not received extensive examination, but the available results can, nevertheless, provide some guidance.

There are several methods of combining variables. One method is to use clinical judgment, in which expert opinion is used to weigh a variety of information gained through interviews, formal testing, and offense history. A second method of risk prediction is boldly statistical. With the statistical method, an algorithm is used to select optimal weights that model the known recidivism results (e.g., multiple regression). A third method of combining variables is employ objective risk scales. With these scales, weights are assigned to variables based on either theory or previous statistical analyses. The

difference between objective risk scales and statistical methods is that the weights for the objective risk scales are not developed on the same sample used to "test" the accuracy of the results. Statistical methods will always provide the largest correlations since they are designed to select optimal weights for that sample. The objective risk scales, however, provide an estimate of how well statistically developed scales could predict in other samples.

As can be seen in Table 4, the predictive accuracy of clinical risk assessments was unimpressive for sexual (.10, $p < .001$), nonsexual violent (.06, ns), and general recidivism (.14, $p < .001$). In contrast, the statistical risk prediction scales (e.g., stepwise regression) typically produced correlations substantially larger than those found for any single variable (.46 for sexual recidivism, .42 for nonsexual violent recidivism and .46 for general recidivism).

The items included in the sexual recidivism statistical risk scales varied considerably across studies. The scales included between three and nine items, with no single item being common to all six studies (Abel, Mittelman, Becker, Rathner & Rouleau, 1988; Barbaree & Marshall, 1988; Hanson et al., 1993b; Quinsey, Rice & Harris, 1995; Prentky, Knight & Lee, 1995; Smith & Monastersky, 1986). The most common items were prior sexual offenses (used in four studies), deviant sexual preferences (3 studies), marital status (3 studies), diverse sexual crimes and male child victim (both used in two studies). The differences between the studies can be attributed to the variations in samples, to the different variables examined, and to the random fluctuations to which "step-wise" methods as particularly vulnerable (Pedhazur, 1982). Many of the unique predictors identified through statistical means would not be expected to replicated in other samples (e.g., number of siblings, adult communication not included as a treatment goal).

We were only able to locate one study (Epperson, Kaul & Huot, 1995) in which a risk instrument was specifically designed for sexual offense recidivism and then cross-validated on a entirely new sample. The 21 items in the scale covered sexual and nonsexual criminal history, substance abuse, and employment. It yielded a correlation of .27 with sexual offense recidivism. Some of the items on Epperson et al.'s (1995) scale were found to be sexual offense recidivism predictors in this meta-analysis (e.g., prior sexual offense conviction, age, multiple paraphilias). The present meta-analysis, however, found that many of Epperson et al.'s items were more closely related to general recidivism than to sexual offense recidivism (e.g., substance abuse, injury to victims).

Objective risk scales designed for general recidivism showed reasonable accuracy in predicting nonsexual recidivism among sexual offenders; such scales, however, showed weak relationships with sexual recidivism. Bonta and Hanson (1995a, 1995b) found that the SIR scale correlated .41 with general recidivism, .34 with nonsexual violent recidivism, but only .09 with sexual recidivism. The SIR scale was developed on Canadian federal offenders and included items related to age, marital status, and 11 items related to criminal history (e.g., history of assault, break & enter, prior imprisonment)(Bonta, Harman, Hann & Cormier, 1996). Similarly, the Community Risk/Need scale used by

the Correctional Service of Canada (CSC) predicted general parole failure among sexual offenders (.23, n = 809) only slightly less well than it predicted parole failure among nonsexual criminals (.33, n = 253; Motiuk & Brown, 1993; Motiuk & Porporino, 1989). Sexual offense recidivism was not specifically examined in the CSC Risk/Need studies.

Another objective risk scale that has been applied to sexual offenders is the Risk Appraisal Guide (RAG; Webster, Harris, Rice, Cormier & Quinsey, 1994). The RAG was developed to predict sexual or nonsexual violent recidivism among patients at a maximum security psychiatric hospital. The 12 items of the RAG addressed personality disorders, early school maladjustment, age, marital status, criminal history, schizophrenia and victim injury (the last two items were negatively weighted, meaning the presence of these factors reduced risk scores). In an application of the RAG to a replication sample of 159 sexual offenders, Rice and Harris (1995) found that it correlated .47 with violent recidivism (sexual and nonsexual violence), but only .20 with sexual offense recidivism.

Discussion

The goal of the present meta-analysis was to identify recidivism risk factors for sexual offenders. Using 61 different data sets, the review examined 69 potential predictors of sexual recidivism, 38 potential predictors of nonsexual violent recidivism, and 58 potential predictors of general (any) recidivism. Approximately one third of the variables were significantly related to recidivism ($p < .05$) with correlations of .10 or greater. No single factor, however, was sufficiently correlated with recidivism to justify its use in isolation.

The large number of predictor variables examined in our review did not allow for a detailed analysis of any individual risk predictor. In particular, the meta-analysis was unable to address the important practical question of how best to operationalize the various constructs. What the review was able to do, however, was to distinguish between those constructs that consistently predicted recidivism, those that consistently did not predict, and those for which further research/analysis was justified.

The results of this review suggested that sex offense recidivism was closely related to sexual deviance. The strongest predictors were phallometric assessments of sexual preferences for children, general deviant sexual preferences, a history of prior sex offenses, and, to a lesser extent, a history of diverse sexual crimes. Sexual recidivism was also associated with indices of general criminality, such as prior nonsexual offenses and antisocial personality disorder, but these correlations were weaker than the correlations with the measures of sexual deviance.

The age and sex of victims were also related to sexual offense recidivism. Consistent with Quinsey, Lalumière et al.'s (1995) conclusions, sexual offenders were more likely to reoffend sexually if they selected male victims, and less likely if they offended against related children (incest offenders). Our review found that rapists were only at slightly higher risk for sexual offense recidivism than were

child molesters, a finding that falls between the conflicting conclusions of Furby et al., (1989) and Quinsey, Lalumière et al. (1995).

A large number of studies found that sexual offense recidivism was related to marital status (single), age (young), and lack of motivation for treatment. There was considerable variability in the age findings, suggesting that the relationship between age and recidivism may not be completely linear. Further research is justified to identify whether recidivism risk peaks at different age periods for different offenders (e.g., rapists in their 20s and child molesters in their 30s and 50s). Although motivation for treatment was a reliable risk factor, further research could determine whether there is a difference between those who drop-out of treatment and those who do not begin treatment at all.

This meta-analysis also identified a number of promising measures not covered in previous reviews. Although these variables correlated with recidivism, they should be considered cautiously since they were based on a minimum number of studies. The most interesting of these correlates was a negative relationship with mother. Both Freudian and social learning theorists should be pleased with such a findings since a boy's relationship with his mother is often considered the prototype for the man's subsequent heterosexual relationships. A negative relationship with mother could also be considered equivalent to having no parental support, since fathers are often uninvolved with childrearing. Evidence in favour of this latter interpretation were the findings that a negative relationship with mother correlated with both sexual and general recidivism.

Other promising predictors of sexual recidivism included early onset of sexual offending, selecting strangers as victims, and the MMPI Masculinity-Femininity Mf scale. These findings support the other results associating sexual offense recidivism with indices of sexual deviance. Although the MMPI Mf scale was originally designed to assess homosexuality, high Mf scores among men with low education have been associated with general sexual concerns and problems (J. R. Graham, 1990). The MMPI Pa (Paranoia) scale was also related to recidivism, but the high variability in the findings suggests that it may have limited generalizability.

The high statistical power generated by the meta-analysis also allows for the identification of factors that are <u>unrelated</u> to recidivism. If the factor's average correlation is close to zero, and there is no significant variability across a sufficient number of studies (e.g., five), then it is reasonable to conclude that factor is not a risk predictor. Even though sexual offenders may be somewhat more likely to have been sexually abuse than nonoffenders (Hanson & Slater, 1988), a history of sexual abuse was not a risk factor for sexual recidivism ($\bar{r}$ = -.01). Also unrelated to sexual offense recidivism were substance abuse problems and general psychological problems (anxiety, depression, low self-esteem, etc.). Furthermore, general psychological problems were unrelated to any form of recidivism (sexual, nonsexual violent, or general). The implication for treatment providers is that increasing the subjective well-being of sexual offenders is unlikely to reduce their recidivism rate (Hanson et al., 1993a).

Among sexual offenders, nonsexual violent recidivism was predicted by many of the same variables that predict recidivism among nonsexual offenders (Andrews & Bonta, 1994; Champion, 1994; Gottfredson & Tonry, 1987). The nonsexual violent recidivists tended to be young, single, have antisocial/psychopathic personality disorders, be of a minority race, and have a history of juvenile delinquency and prior violent offenses. There were, as well, strong differences in nonsexual violent recidivism rates based on sexual offense histories. The recidivism rates were significantly higher for rapists than for child molesters and incest offenders. Such differences are not surprising since rapists tend to share more characteristics with the general criminal populations than do child molesters (Baxter, Marshall, Barbaree, Davidson & Malcolm, 1984; West, 1983). Interestingly, nonsexual violent recidivism was unrelated to the number of prior sexual offenses.

Although based on a minimum number of studies, nonsexual violent recidivism was associated with an elevation on the MMPI Pd (Psychopathic deviant) scale, and a low MMPI Social Introversion scale. These findings are consistent with previous research that have identified violent offenders as impulsive, extroverted individuals who lack strong bonds to social convention (Blackburn, 1989; J. R. Graham, 1990; Hare, Forth & Strachan, 1992).

The predictors of general recidivism were similar to the predictors of nonsexual violent recidivism. General recidivism was associated with a history of juvenile deliquency, prior offenses of any type, antisocial personality disorder, marital status (single), youthfulness, and race. The only sexual offense history variable, however, that was reliably associated with general recidivism was that incest offenders were lower risk.

This meta-analysis found that general recidivism was associated with a number of dynamic risk factors or criminogenic needs (e.g., Bonta, 1996). Offenders were at higher risk for general recidivism if they had a current alcohol abuse problem or if they were intoxicated at the time of the offense. As well, those who denied their offenses and/or were unmotivated for treatment were at higher risk for general recidivism than were other offenders.

This review found that there were different predictors for different types of recidivism. In general, sexual recidivism was associated with sexual deviance, and, to a lesser extent, general criminological factors (age, marital status, total prior offenses). The predictors of general and nonsexual violent recidivism, in contrast, were similar to the predictors of general recidivism among nonsexual criminals (e.g., age, marital status, juvenile deliquency, antisocial personality disorder)(Champion, 1994; Gottfredson & Tonry, 1987).

As with previous reviews (Furby et al., 1989; Hall, 1990; Quinsey, Lalumière et al., 1995), almost all the predictors of sexual offense recidivism were historical or extremely stable variables. Historical factors cannot improve, and it is difficult to change deviant sexual preferences (Rice, Quinsey & Harris, 1991) or antisocial/psychopathic personality disorder (Hare et al., 1992). The most changeable (dynamic) risk factor was motivation for treatment. Offenders who rejected treatment were at higher risk, but it is possible that such offenders

might be able to reduce their level of risk by renewing their cooperation with a treatment program.

The difficulty in identifying changeable risk factors may be related to the designs of the recidivism studies. Since the sexual offenses recidivism rate is low (13% over 4-5 years), recidivism studies require long follow-up periods. Consequently, in follow-up research, only those factors that remain stable over a number of years have the potential of predicting sexual offense recidivism. Dynamic predictors of general recidivism are much easier to identify since there is a relatively short period of time (often months) between the assessment period and the detection of a new offense.

Changeable risk factors need to be assessed close to the recidivism event. Relapse prevention clinicians, for example, recommend reviewing the clinical records of offenders to identify the factors that immediately precede the reoffense (Pithers, Beal, Armstrong & Petty, 1989). It is interesting to note that Pithers, Kashima, Cumming, Beal and Buell's (1988) review of clinical records identified risk factors that were substantially different than those identified in our meta-analytic review. Based on coding clinical records, Pithers et al. (1988) identified anger, low self-esteem, and low victim empathy as common precursors to recidivism, whereas none of these factors were significantly related to recidivism in our meta-analysis. The conflicting nature of these results may be partly attributible to the contrast between the short time frames in Pithers et al. (1988) study (days, weeks) and the long time frames of the studies included in this meta-analysis (years). Pithers et al.'s (1988) results, however, are difficult to interpret without a control group of nonrecidivists. All sex offenders may have times when they lack self-esteem (as do most other people), but lack of self esteem need not be related to recidivism.

The identification of dynamic risk factors requires evidence that changes in certain characteristics are associated with changes in recidivism risk. McKibben, Proulx and Lusignan (1994), for example, conducted repeated assessment of conflicts, negative mood, and deviant sexual fantasies among inpatient sexual offenders. They found that when the sexual offenders were upset, they were more likely to report deviant sexual fantasies. These significant within-subject correlations contrast with the nonsignificant between-subject correlations between mood and recidivism for the same subject population (Proulx et al., 1995). The extent to which sexual offenders are distressed does not predict recidivism, but sexual offenders appear to react deviantly when distressed.

Although the lack of repeated assessments may have made it difficult to identify dynamic risk factors, part of the difficulty could have been related to inadequate measures. In many studies, the methods for assessing the risk factors were not even described. Improving the assessment of dynamic risk factors involves two main approaches. The first approach is to develop better measures of constructs that already have theoretical support, if not empirical support. Included in this approach would be improved measures of victim empathy (Hanson & Scott, 1995; Malamuth & Brown, 1994) and deviant sexual attitudes (Bumby, 1996; Hanson, Gizzarelli, & Scott, 1994). Another approach to identifying dynamic risk factors would be to examine promising constructs that have

yet to be used in follow-up studies. A list of potential dynamic risk indicators could include the use of sex as a coping mechanism (Cortoni & Marshall, 1995), associations with other sexual offenders (Hanson & Scott, in press), access to potential victims, and unfulfilled intimacy needs (Frisbie, 1969; Seidman, Marshall, Hudson & Robertson, 1994).

Just as there are promising dynamic risk factors that have yet to be examined in follow-up studies, there are also a number of potentially important static risk factors that have received little research attention. Few studies examined developmental history factors, for example, although there is evidence that such factors may be important predictors of sexual offending. Many sexual offenders report the development of deviant sexual interest at an early age (Abel, Mittelman & Becker, 1985). There are well documented links between various childhood variables (e.g., parental discipline, disobedience) and the development of juvenile delinquency and adult criminality (Andrews & Bonta, 1994; Loeber & Dishion, 1983; Loeber & Stouthamer-Loeber, 1987). In general, those involved in persistent adult criminality typically have an esculating progression from minor disobedience, conduct disorder, and juvenile deliquency (Loeber & Stouthamer-Loeber, 1987). Similarly, there should be predictable developmental precursors to habitual sexual offending. Asking children about their deviant sexual fantasies does raise some ethical issues, but it is likely that such research could be conducted in the context of treatment for high-risk samples (e.g., child sexual abuse victims, adolescent offenders).

The present review focussed on identifying factors that predicted recidivism among sexual offenders. Although a large number of individual risk factors were identified, the predictive accuracy of most the variables was not large (.10 to .20 range). The next logical question addresses how well recidivism can be predicted using combinations of factors. Our review was unable to answer this question directly since the intercorrelations between the predictors variables could not be determined (the variables were measured in different samples). However, given that the magnitude of the correlations for the best individual predictors were in the .20-.30 range, it is likely that combinations of the variables identified in our meta-analysis could predict sexual recidivism with correlations in the .30 to .40 range. Correlations in this range are sometimes considered minor since they "only account for" 10-15% of the variance; however, predictor scales that are correlated with recidivism in the .35 range are able to identify high-risk groups with greater than 80% chance for recidivism from low-risk groups whose recidivism risk is less than 20% (Hanson et al., 1992; Quinsey, Rice et al., 1995). Such risk prediction scales would have considerable utility in applied settings, and are an obvious improvement over the typical methods of clinical risk assessment. It is likely that predictive accuracy could be increased even further given better understanding and better measures of the static and dynamic risk factors for sexual offenders.

References

References marked with an asterisk indicate studies included in the meta-analysis.

Abel, G. G., Mittelman, M. S., & Becker, J. V. (1985). Sexual offenders: Results of assessment and recommendations for treatment. In M. H. Ben-Aron, S. J. Hucker, & C. D. Webster (Eds.). Clinical criminology (pp. 191-205). Toronto, Ontario: Clarke Institute of Psychiatry.

*Abel, G. G., Mittelman, M., Becker, J. V., Rathner, J., & Rouleau, J. (1988). Predicting child molesters' response to treatment. In R. A. Prentky & V. L. Quinsey (Eds.), Human sexual aggression: Current perspectives (pp. 223-234). New York: New York Academy of Science.

Alexander, M. (1995, September). Sex offender treatment: Does it work? Presentation at the NOTA/ATSA 1st Joint International Conference, Cambridge, UK.

Anderson, N. W., & Masters, K. W. (1992). Predators and politics: A symposium on Washington's Sexually Violent Predators Statute [Special Issue]. University of Puget Sound Law Review, 15(3).

Andrews, D. A., & Bonta, J. (1994). The psychology of criminal conduct. Cincinnati, OH: Anderson.

*Barbaree, H. E., & Marshall, W. L. (1988). Deviant sexual arousal, offense history and demographic variables as predictors of reoffense among child molesters. Behavioral Sciences and the Law, 6, 267-280.

Baxter, D. J., Marshall, W. L., Barbaree, H. E., Davidson, P. R., & Malcolm, P. B. (1984). Deviant sexual behavior: Differentiating sex offenders by criminal and personal history, psychometric measures, and sexual response. Criminal Justice and Behavior, 11, 477-501.

*Beck, A. J., & Shipley, B. E. (1989). Recidivism of prisoners released in 1983. Washington, DC: Bureau of Justice Statistics.

Blackburn, R. (1989). Psychopathy and personality disorder in relation to violence. In K. Howells & C. R. Hollin, (Eds.), Clinical approaches to violence (pp. 61-87). Chichester, UK: John Wiley & Sons.

*Bluglass, R. (1980). Indecent exposure in the West Midlands. In D. West (Ed.), Sex offenders in the criminal justice system (pp. 171-180) Cambridge: Cambridge Institute of Criminology.

Bonta, J. (1996). Risk-needs assessment and treatment. In A. T. Harland, (Ed.), Choosing correctional options that work (pp. 18-32). Thousand Oaks, CA: Sage.

Bonta, J., & Hanson, R. K. (1994). Gauging the risk for violence: Measurement, impact and strategies for change (User Report No. 1994-09). Ottawa, Canada: Department of the Solicitor General of Canada.

*Bonta, J., & Hanson, R. K. (1995a). [10-year recidivism of Canadian federal offenders]. Unpublished raw data.

Bonta, J., & Hanson, R. K. (1995b, August). Violent recidivism of men released from prison. Paper presented at the 103rd annual convention of the American Psychological Association: New York.

Bonta, J., Harman, W. G., Hann, R. G., & Cormier, R. B. (1996). The prediction of recidivism among federally sentenced offenders: A re-validation of the SIR scale. Canadian Journal of Criminology, 38, 61-79.

*Broadhurst, R. G., & Maller, R. A. (1991). Sex offending and recidivism. (Tech. Res. Rep. No. 3). Nedlands, Western Australia: University of Western Australia, Crime Research Centre.

*Broadhurst, R. G., & Maller, R. A. (1992). The recidivism of sex offenders in the Western Australian prison population. British Journal of Criminology, 32(1), 54-80.

Bumby, K. M. (1996). Assessing the cognitive distortions of child molesters and rapists: Development and validation of the MOLEST and RAPE scales. Sexual Abuse: A Journal of Research and Treatment, 8, 37-54.

Champion, D. J. (1994). Measuring offender risk: A criminal justice sourcebook. Westport, CT: Greenwood Press.

Cortoni, F., & Marshall, W. L. (1995). Coping with Sex Inventory. Unpublished manuscript. Available from the Psychology Department, Queens University, Kingston, Ontario, Canada, K7L 2N6.

*Christiansen, K., Elers-Nielsen, M., Le Maire, L., & Stürup, G. K. (1965). Recidivism among sexual offenders. Scandinavian Studies in Criminology, 1, 55-85.

*Davis, G. L., Hoffman, R. G., & Stacken, N. (1991, August). 2-4 year post-incarceration follow-up of treated sex offenders. Paper presented at the annual convention of the American Psychological Association, San Francisco, CA.

*Dix, G. E. (1976). Differential processing of abnormal sex offenders. Journal of Criminal Law, Criminology, & Police Science, 67, 233-243.

*Doshey, L. J. (1943). The boy sex offender and his later career. Montclair, NJ: Patterson Smith.

*Epperson, D. L., Kaul, J. D., Huot, S. J. (1995, October). Predicting risk for recidivism for incarcerated sex offenders: Updated development on the Sex Offender Screening Tool (SOST). Poster session presented at the annual conference of the Association for the Treatment of Sexual Abusers, New Orleans, LA.

Farrington, D. P., & Loeber, R. (1989). Relative improvement over chance (RIOC) and phi as measures of predictive efficiency and strength of association in 2 × 2 tables. Journal of Quantitative Criminology, 5, 201-213.

*Federoff, J. P., Wisner-Carlson, R., Dean, S., & Berlin, F. S. (1992). Medroxy-progesterone acetate in the treatment of paraphilic sexual disorders. Journal of Offender Rehabilitation, 18(3/4), 109-123.

*Fitch, J. H. (1962). Men convicted of sexual offences against children: A descriptive follow-up study. British Journal of Criminology, 3, 18-37.

*Florida Department of Health and Rehabilitative Services. (1984). Status of the sex offender treatment programs, fiscal year 1983-84, and addendum. Annual Report to the Florida Legistature, Alcohol, Drug Abuse, and Mental Health Program Office. Tampa, FL: Author.

*Frisbie, L. V. (1969). Another look at sex offenders in California. (California Mental Health Research Monograph No. 12). California: State of California Department of Mental Hygiene.

*Frisbie, L. V., & Dondis, E. H. (1965). Recidivism among treated sex offenders. (California Mental Health Research Monograph No. 5). California: State of California Department of Mental Hygiene.

Furby, L., Weinrott, M. R., & Blackshaw, L. (1989). Sex offender recidivism: A review. Psychological Bulletin, 105, 3-30.

*Gibbens, T. C. N., Soothill, K. L., & Way, C. K. (1978). Sibling and parent-child incest offences. British Journal of Criminology, 18, 40-52.

*Gibbens, T. C. N., Soothill, K. L., & Way, C. K. (1980). Child molestation. In D. J. West (Ed.), Sex offenders in the criminal justice system. Papers presented to the 12th Cropwood Round-Table Conference (pp. 89-99). Cambridge, Great Britain: Institute of Criminology, University of Cambridge.

*Gibbens, T. C. N., Way, C. K., & Soothill, K. L. (1977). Behavioural types of rape. British Journal of Psychiatry, 130, 32-42.

*Gordon, A., & Bergin, H. (1990). Description and evaluation of the sexual offender program at the Regional Psychiatric Centre. Paper presented at annual meeting of the Canadian Psychological Association, Ottawa, Ontario, Canada.

*Gordon, A., & Porporino, F. J. (1990, May). Managing the treatment of sex offenders: A Canadian perspective. (Research Brief No. B-05). Ottawa, Canada: Research and Statistics Branch, Correctional Service of Canada.

*Gore, D. K. (1988). Measuring the cognitive distortions of child molesters: Psychometric properties of the cognition scale. Unpublished Doctoral Dissertation, Georgia State University, Georgia.

Gottfredson, D. M., & Tonry, M. (Eds.). (1987). Prediction and classification: Criminal justice decision making. Chicago: University of Chicago Press.

Graham, J. R. (1990). MMPI-2: Assessing personality and psychopathology. New York: Oxford University Press.

*Graham, K. R. (1991). The sexual addiction model in treatment of incarcerated offenders. Sexual Addiction and Compulsivity, 1(3), 1-6.

*Gretton, H., McBride, M., & Hare, R. D. (1995, October). Psychopathy in adolescent sex offenders: A follow-up study. Paper presented at the annual conference of the Association for the Treatment of Sexual Abusers, New Orleans, LA.

*Grünfeld, B., & Nõreik, K. (1986). Recidivism among sex offenders: A follow-up study of 541 Norwegian sex offenders. International Journal of Law and Psychiatry, 9, 95-102.

*Hackett, T. P. (1971). The psychotherapy of exhibitionists in a court clinic setting. Seminars in Psychiatry, 3, 297-306.

*Hall, G. C. N. (1988). Criminal Behaviour as a function of clinical and actuarial variables in a sex offender population. Journal of Consulting and Clinical Psychology, 55, 773-775.

Hall, G. C. N. (1990). Prediction of sexual aggression. Clinical Psychology Review, 10, 229-245.

Hall, G. C. N. (1995a). Sexual offender recidivism revisited: A meta-analysis of recent treatment studies. Journal of Consulting and Clinical Psychology, 63, 802-809.

*Hall, G. C. N. (1995b). The preliminary development of a theory-based community treatment for sexual offenders. Professional Psychology: Research and Practice, 26, 478-483.

*Hall, G. C. N., & Proctor, W. C. (1987). Criminological predictors of recidivism in a sexual offender population. Journal of Consulting and Clinical Psychology, 55, 111-112.

Hanson, R. K., Gizzarelli, R., & Scott, H. (1994). The attitudes of incest offenders: Sexual entitlement and acceptance of sex with children. Criminal Justice and Behavior, 21, 187-202.

Hanson, R. K., & Scott, H. (1995). Assessing perspective-taking among sexual offenders, nonsexual criminals, and nonoffenders. Sexual Abuse: A Journal of Research and Treatment, 7, 259-277.

Hanson, R. K., & Scott, H. (in press). Social networks of sexual offenders. Psychology, Crime, & Law.

Hanson, R. K., Scott, H., & Steffy, R. A. (1995). A comparison of child molesters and non-sexual criminals: Risk predictors and long-term recidivism. Journal of Research in Crime and Delinquency, 32(3), 325-337.

Hanson, R. K., & Slater, S. (1988). Sexual victimization in the history of child molesters: A review. Annals of Sex Research, 1, 485-499.

Hanson, R. K., Steffy, R. A., & Gauthier, R. (1992). Long-term follow-up of child molesters: Risk prediction and treatment outcome.

(User Report No. 1992-02.) Ottawa: Corrections Branch, Ministry of the Solicitor General of Canada.

Hanson, R. K., Steffy, R. A., & Gauthier, R. (1993a). Long-term recidivism of child molesters. Journal of Consulting and Clinical Psychology, 61, 646-652.

*Hansen, R. K., Steffy, R. A., & Gauthier, R. (1993b). [Long-term recidivism of child molesters]. Unpublished raw data.

Hare, R. D., Forth, A. E., & Strachan, K. E. (1992). Psychopathy and crime across the life span. In R. D. Peters, R. J. McManon, & V. L. Quinsey, (Eds.), Aggression and violence throughout the life span (pp. 285-300). Newburby Park, CA: Sage.

Hays, W. L. (1981). Statistics (3rd ed.). New York: Holt, Rinehart and Winston.

Hedges, L. V., & Olkin, I. (1985). Statistical methods for meta-analysis. New York: Academic Press.

Hunter, J. E., & Schmidt, F. L. (1990). Methods for meta-analysis: Correcting error and bias in research findings. Newbury Park, CA: Sage.

Johnson, H., & Sacco, V. F. (1995). Researching violence against women: Statistics Canada's national survey. Canadian Journal of Criminology, 37, 281-304.

Jones, P. R. (1996). Risk prediction in criminal justice. In A. T. Harland, (Ed.), Choosing correctional options that work (pp. 33-68). Thousand Oaks, CA: Sage.

*Kahn, T. J., & Chambers, H. J. (1991). Assessing reoffense risk with juvenile sex offenders. Child Welfare, 70, 333-345.

*Khanna, A., Brown, P., Malcolm, P. B., & Williams, S. M. (1989, March). Outcome data on sex offenses assessed and treated at Regional Treatment Centre (Ontario). Paper presented at annual meeting of the Special Needs Offenders Conference, Ottawa, Ontario, Canada.

Knopp, F. H., Freeman-Longo, R., & Stevenson, W. F. (1992). Nationwide survey of juvenile and adult sex offender treatment programs and models. Brandon, VT: Safer Society.

Koss, M. P. (1993). Detecting the scope of rape: A review of prevalence research methods. Journal of Interpersonal Violence, 8, 198-222.

*Lab, S. P., Shields, G., & Schondel, C. (1993). Research note: An evaluation of juvenile sexual offender treatment. Crime and Delinquency, 39, 543-553.

Lees-Haley, P. R. (1992). Psychodiagnostic test usage by forensic psychologists. American Journal of Forensic Psychology, 10, 25-30.

Ley, P. (1972). Quantitative aspects of psychological assessment: An introduction. London: Duckworth.

Lisak, D., & Roth, S. (1988). Motivational factors in nonincarcerated sexually aggressive men. Journal of Personality and Social Psychology, 55, 795-802.

Loeber, R., & Dishion, T. J. (1983). Early predictors of male delinquency. Psychological Bulletin, 94, 68-99.

Loeber, R., & Stouthamer-Loeber, M. (1987). Prediction. In H. C. Quay, (Ed.), Handbook of juvenile delinquency (pp. 325-382). New York: Wiley.

*Mair, K. J., & Stevens, R. H. (1994). Offending histories and offending behaviour. A ten year follow-up of sex offenders tried by sheriff and district courts in Grampian, Scotland. Psychology, Crime and Law, 1, 83-92.

*Mair, K. J., & Wilson, D. (1995). Sexual reconviction over time in Scottish sex offenders identified through court records. Unpublished manuscript.

Malamuth, N. M., & Brown, L. M. (1994). Sexually aggressive men's perceptions of women's communications: Testing three explanations. Journal of Personality and Social Psychology, 67, 699-712.

*Malcolm, P. B., Andrews, D. A., & Quinsey, V. L. (1993). Discriminant and predictive validity of phallometric measured sexual age and gender preference. Journal of Interpersonal Violence, 8, 486-501.

*Maletzky, B. M. (1980). Assisted covert sensitization. In D. J. Cox and R. J. Daitzman (Eds.), Exhibitionism: Description, assessment and treatment (pp. 187-251). New York: Garland.

*Maletzky, B. M. (1991). Treating the sexual offender. Newbury Park, CA: Sage Publications.

*Maletzky, B. M. (1993). Factors associated with success and failure in the behavioral and cognitive treatment of sexual offenders. Annals of Sex Research, 6, 241-258.

The management and treatment of sex offenders. (1990). Ottawa, Canada: Minister of Supply and Services.

*Marques, J. K., Day, D. M., Nelson, C., & West, M. A. (1993). Effects of cognitive-behavioral treatment on sex offenders' recidivism: Preliminary results of a longitudinal study. Criminal Justice and Behavior, 21, 28-54.

*Marques, J. K., Nelson, C., West, M. A., & Day, D. M. (1994). The relationship between treatment goals and recidivism among child molesters. Behaviour Research and Therapy, 32, 577-588.

*Marshall, P. (1994). Reconviction of imprisoned sexual offenders. Research Bulletin, 36, 23-29.

*Marshall, W. L., & Barbaree, H. E. (1988). The long-term evaluation of a behavioral treatment program. Behavior Research and Therapy, 26, 499-511.

Marshall, W. L., Jones, R., Ward, T., Johnston, P., & Barbaree, H. E. (1991). Treatment outcome with sex offenders. Clinical Psychology Review, 11, 465-485.

Marshall, W. L., & Pithers, W. D. (1994). A reconsideration of treatment outcome with sex offenders. Criminal Justice and Behavior, 21, 10-27.

*McBride, M., Gretton, H., & Hare, R. D. (1995, October). Familial risk factors, psychopathy and recidivism in adolescent sexual offenders. Paper presentation at the annual conference of the Association for the Treatment of Sexual Abusers, New Orleans, LA.

*McConaghy, N., Blaszczynski, A., Armstrong, M. S., & Kidson, W. (1989). Resistance to treatment of adolescent sex offenders. Archives of Sexual Behavior, 18(2), 97-107.

McKibben, A., Proulx, J., & Lusignan, R. (1994). Relationships between conflict, affect and deviant sexual behaviors in rapists and child molesters. Behaviour Research and Therapy, 32, 571-575.

*Meyers, L. C., & Romero, J. (1980). A ten-year follow-up of sex offender recidivism. Philadephia, PA: J. J. Peters Institute.

*Mohr, J., Turner, R., & Jerry, M. (1964). Pedophilia and exhibitionism. Toronto: University of Toronto Press.

*Money, J., & Bennett, R. G. (1981). Post-adolescent paraphilic sex offenders: Antiandrogenic and counselling therapy follow-up. International Journal of Mental Health, 10(2/3), 122-133.

*Motiuk, L. L., & Brown, S. L. (1993). Survival time until suspension for sex offenders on conditional release. (Research Report No. R-31). Ottawa, Canada: Correctional Service of Canada.

Motiuk, L. L., & Porporino, F. J. (1989). Field test of the community risk/needs management scale: A study of offenders on caseload. (Research Report No. R-06). Ottawa, Canada: Correctional Service of Canada.

Norušis, M. J. (1993). SPSS for Windows. Chicago: SPSS Inc.

*Nutbrown, V., & Stasiak, E. (1987). A retrospective analysis of O.C.I. cost effectiveness 1977-81. (Ontario Correctional Institute Research Monograph No. 2). Brampton, Ontario, Canada: Ontario Ministry of Correctional Services.

*Pacht, A. R., & Roberts, L. M. (1968). Factors related to parole experiences and the deviated sex offender. Correctional Psychologist, 3, 8-9, 34-35.

Pedhazur, E. J. (1982). Multiple regression in behavioral research (2nd. ed.). New York: Holt, Rinehart and Winston.

Pellerin, B., Proulx, J., Ouimet, M., Paradis, Y., McKibben, A., & Aubut, J. (1996). Étude de la récidive post-traitement chez des agresseurs sexuels judiciarisés. Criminologie, 29(1), 85-108.

*Perkins, D. (1987). A psychological treatment programme for sex offenders. In B. J. McGurk, D. M. Thornton, & M. Williams,

(Eds.), Applying psychology to imprisonment: Theory and practice (pp. 191-217). London: Her Majesty's Stationary Office.

Peters, S., Wyatt, G., & Finkelhor, D. (1986). Prevalence. In D. Finkelhor and Associates (Eds.), Sourcebook on child sexual abuse (pp. 15-59). Newbury Park, CA: Sage.

*Pierson, T. A. (1989). 1989 update figures for Missouri Sex Offender Study. Jefferson City, MO: Missouri Department of Corrections.

Pithers, W. D., Beal, L. S., Armstrong, J., & Petty, J. (1989). Identification of risk factors through clinical interviews and analysis of records. In D. R. Laws, (Ed.), Relapse prevention with sex offenders (pp. 77-87). New York: Guilford Press.

Pithers, W. D., Kashima, K., Cummings, G. F., Beal, L. S., & Buell, M. (1988). Relapse prevention of sexual aggression. In R. Prentky & V. Quinsey, (Eds.), Human sexual aggression: Current perspectives (pp. 244-260). New York: New York Academy of Sciences.

*Prentky, R. A., Knight, R. A., & Lee, A. F. (1994, November). A 24-year follow-up of (variably) treated sex offenders: Methodological issues in determining recidivism rates. Paper presentation at the annual conference of the Association for the Treatment of Sexual Abusers, San Francisco, CA.

*Prentky, R. A., Knight, R. A., & Lee, A. F. (1995). Risk assessment with extrafamilial child molesters. Unpublished manuscript.

*Prentky, R. A., Knight, R. A., Lee, A. F., & Cerce, D. D. (1995). Predictive validity of lifestyle impulsivity for rapists. Criminal Justice and Behavior, 22(2), 106-128.

Proulx, J., Pellerin, B., McKibben, A., Aubut, J., & Ouimet, M. (in press). Static and dynamic predictors fo recidivism in sexual offenders. Sexual Abuse.

*Proulx, J., Pellerin, B., McKibben, A., Aubut, J., & Ouimet, M. (1995). [Static and dynamic predictors of recidivism in sexual aggressors]. Unpublished raw data.

Quinsey, V. L. (1984). Sexual aggression: Studies of offenders against women. In D. N. Weisstub (Ed.), Law and mental health: International perspectives (Vol. 1; pp. 84-121). New York: Pergamon.

Quinsey, V. L. (1986). Men who have sex with children. In D. N. Weisstub (Ed.), Law and mental health: International perspectives (Vol. 2; pp. 140-172). New York: Pergamon.

Quinsey, V. L., Harris, G. T., Rice, M. E., & Lalumière, M. (1993). Assessing treatment efficacy in outcome studies of sex offenders. Journal of Interpersonal Violence, 8, 512-523.

*Quinsey, V. L., Lalumière, M. L., Rice, M. E., & Harris, G. T. (1995). Predicting sexual offenses. In J. C. Campbell (Ed.), Assessing dangerousness: Violence by sexual offenders, batterers, and child abusers (pp. 114-137). Thousand Oaks, CA: Sage.

*Quinsey, V. L., Rice, M. E., & Harris, G. T. (1995). Actuarial prediction of sexual recidivism. Journal of Interpersonal Violence, 10(1), 85-105.

*Quinsey, V. L., Rice, M. E., & Harris, G. T. (1990). Psychopathology, sexial deviance, and recidivism among sex offenders released from a maximum security psychiatric institution. (Res. Rep. No. VII-I). Penetanguishene, Ontario, Canada: Mental Health Centre.

*Radzinowicz, L. (1957). Sexual offenses. London: MacMillan.

*Reddon, J. R., Studer, L., & Estrada, L. (1995). [Recidivism data from the Pheonix Program for sex offender treatment]. Unpublished raw data.

*Rice, M. E., & Harris, G. T. (1995). Cross-validation of actuarial predictions. (Res. Rep. No. XII-II). Penetanguishene, Ontario: Mental Health Centre.

*Rice, M. E., Harris, G. T., & Quinsey, V. L. (1990). A follow-up of rapists assessed in a maximum-security psychiatric facility. Journal of Interpersonal Violence, 5(4), 435-448.

*Rice, M. E., Quinsey, V. L., & Harris, G. T. (1989). Predicting sexual recidivism among treated and untreated extrafamilial child molesters released from a maximum security psychiatric institution. (Res. Rep. No. VI-III). Penetanguishene, Ontario, Canada: Mental Health Centre.

*Rice, M. E., Quinsey, V. L., & Harris, G. T. (1991). Sexual recidivism among child molesters released from a maximum security institution. Journal of Consulting and Clinical Psychology, 59, 381-386.

*Romero, J. J., & Williams, L. M. (1983). Group psychotherapy and intensive probation supervision with sex offenders: A comparative study. Federal Probation, 47, 36-42.

*Rooth, R. G., & Marks, I. M. (1974). Persistent exhibitionism: Short-term response to aversion, self-regulation, and relaxation treatments. Archives of Sexual Behavior, 3, 227-247.

Rosenthal, R. (1991). Meta-analytic procedures for social research. Newbury Park, CA: Sage.

Rosenthal, R. (1995). Writing meta-analytic reviews. Psychological Bulletin, 118, 183-192.

*Ryan, G., & Miyoshi, T. (1990). Summary of a pilot follow-up study of adolescent sexual perpetrators after treatment. Interchange, 1, 6-8.

*Schram, D. D., Milloy, C. D., & Rowe, W. E. (1991). Juvenile sex offenders: A follow-up study of reoffense behavior. Olympia, WA: Washington State Institute for Public Policy.

Seidman, B. T., Marshall, W. L., Hudson, S. M., & Robertson, P. J. (1994). An examination of intimacy and loneliness in sex offenders. Journal of Interpersonal Violence, 9, 518-534.

*Smiley, C., & Mulloy, R. (1995). Treatment of sex offenders: Does intervention work? Unpublished manuscript.

*Smith, W. R., & Monastersky, C. (1986). Assessing juvenile sexual offenders' risk for reoffending. Criminal Justice and Behavior, 13, 115-140.

*Song, L., & Lieb, R. (1995). Washington State sex offenders: Overview of recidivism studies. Olympia, WA: Washington State Institute for Public Policy.

*Soothill, K. L., Jack, A., & Gibbens, T. (1976). Rape: 22-year cohort study. Medicine, Science and the Law, 16, 62-69.

Studer, L. H., Reddon, J. R., Roper, V., & Estrada, L. (in press). Phoenix: An inpatient treatment program for sex offenders. Journal of Offender Rehabilitation.

*Sturgeon, V. H., & Taylor, J. (1980). Report of a five-year follow-up study of mentally disordered sex offenders released from Atascadero State Hospital in 1973. Criminal Justice Journal, 4, 31-63.

*Stürup, G. K. (1953). Sexual offenders and their treatment in Denmark and other Scandinavian countries. International Review of Criminal Policy, 4, 1-19.

*Stürup, G. K. (1960). Sex offenses: The Scandinavian experience. Law and Contemporary Problems, 25, 361-375.

*Stürup, G. K. (1961). Correctional treatment and the criminal sexual offender. Canadian Journal of Corrections, 3, 250-265.

Templeman, T. L., & Stinnett, R. D. (1991). Patterns of sexual arousal and history in a "normal" sample of young men. Archives of Sexual Behavior, 20, 137-150.

*Tracy, F., Donnelly, H., Morgenbesser, L., & MacDonald, D. (1983). Program evaluation: Recidivism research involving sex offenders. In J. G. Greer & I. R. Stuart (Eds.), The sexual aggressor: Current perspectives on treatment (pp. 198-213). New York: Van Nostrand Reinhold.

*Thornton, D. (1995). [A 16-year follow-up of 244 sexual offenders from HM Prison Service]. Unpublished raw data.

*Vermont Center for Prevention and Treatment of Sexual Abuse. (1991). Vermont Treatment Program for Sexual Aggressors: Program evaluation. (Available from 18 Blair Park Road, P.O. Box 606, Villiston, VT 05495-0606).

*Weaver, C., & Fox, C. (1984). The Berkeley Sex Offender Group: A seven year follow-up. Probation Journal, 31(4), 143-146.

Webster, C. D., Harris, G. T., Rice, M. E., Cormier, C., & Quinsey, V. L. (1994). The violence prediction scheme. Toronto, Ontario: Centre of Criminology, University of Toronto.

West, D. J. (1983). Sex offenses and offending. In M. Tonry & N. Morris (Eds.), Crime and justice: An annual review of research (pp.183-233). Chicago: University of Chicago Press.

*Williams, S. M., & Khanna, A. (circa 1987). Evaluation of the sex offender treatment program, Regional Treatment Centre - Ontario. Kingston, Ontario, Canada: Ontario Regional Treatment Centre, Correctional Service of Canada.

*Wing, W. A. (circa 1984). A study of reoffenses by treated sex offenders at Western State Hospital. Unpublished manuscript.

*Wormith, J. S., & Ruhl, M. (1987). Preventive detention in Canada. Journal of Interpersonal Violence, 1, 399-430.

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Table 1

Predictors of Sexual Recidivism

Variable	Median	r_+	W	Q	n	Studies
Developmental History						
Negative relationship with mother	.11	.16	3.00**	.85	376	20, 30.1, 39
Family problems (general)	.07	.08	2.12*	6.22	812	5, 6.1, 37, 43.1, 47
Juvenile delinquency	.06	.07	2.74**	8.20	1,486	4, 5, 6.1, 12.1, 37, 46, 56
Negative relationship with father	.00	.02	.37	.80	377	20, 30.1, 39
Sexually abused as child	.00	-.01	.90	8.18	5,051	6.1, 9.1, 20, 30.1, 56
Demographic Factors						
Age	-.09	-.13	10.97***	51.62***	6,969	1.1, 5, 9.2, 17, 18, 19, 20, 23.1, 26.1, 29.1, 36.1, 38, 39, 40, 43.2, 46, 47, 49, 51, 53, 61
	-.08	-.10	8.64***	111.77***	8,184	including outlier 48
Single (never married)	.11	.11	5.91***	9.62	2,850	18, 19, 20, 38, 39, 43.1, 46, 49
Married (currently)	-.08	-.09	4.83***	14.14	2,828	1.2, 18, 19, 20, 34, 38, 39, 46, 47, 49
Employment instability	.07	.07	1.81	3.56	762	1.2, 43.3, 47, 49, 51
	.07	.39	29.32***	106.64***	5,143	including outlier 9.1
Social class (low)	.00	.05	1.82	1.28	1,622	1.2, 18, 19, 29.1, 29.2, 47
	.01	.20	15.61***	54.98***	6,003	including outlier 9.1
Low education	.00	-.03	1.51	12.61*	2,304	1.2, 19, 20, 30.1, 39, 43.1, 47
Minority race	.00	.00	.16	13.02*	2,505	1.2, 6.1, 37, 39, 46, 47, 53

(table continues)

Table 1 continued

Variable	Median	r.	W	Q	n	Studies
Non-sexual criminal history						
Prior offenses (any/non-sexual)	.12	.13	12.35***	44.31***	8,683	8, 9.2, 11.2, 18, 20, 23.1, 24.2, 26.1, 30.1, 31.1, 38, 39, 43.2, 44.2, 46, 47, 49, 51, 52, 53
Admissions to corrections	.08	.09	3.10**	6.50	1,074	23.1, 38, 43.2, 46
Prior violent offenses	.01	.05	1.91	11.55*	1,421	12.2, 20, 38, 43.2, 46, 49
Prior non-violent offenses	-.02	.00	.08	4.73	685	20, 43.2, 46
Sexual Criminal History						
Prior sex offenses	.19	.19	20.45***	81.25***	11,294	1.2, 4, 5, 6.1, 7, 8, 9.2, 12.2, 18, 20, 23.1, 28, 29.1, 29.2, 30.2, 31.1, 34, 36.2, 38, 39, 40, 43.3, 44.1, 46, 48, 49, 51, 52, 53
	.20	.29	37.11***	513.77***	15,675	including outlier 9.1
Victim stranger (versus acquaintance)	.22	.15	3.16**	8.29	465	5, 36.2, 39, 49
	.26	.38	27.65***	39.34***	4,846	including outlier 9.1
Victim female child	-.08	-.14	14.22***	51.12***	10,198	1.2, 9.1, 12.2, 18, 19, 20, 25, 29.1, 32, 38, 39, 40, 43.1, 47, 48, 49, 52
Early onset of sex offending	.14	.12	3.55***	1.05	919	4, 18, 20, 51
	.11	.03	1.07	32.17***	1,175	including outlier 37
Victim related child	-.12	-.11	9.33***	31.79	6,889	1.2, 2, 3, 5, 6.2, 8, 11.1, 18, 19, 20, 23.1, 25, 29.1, 36.2, 38, 39, 42, 44.1, 48, 49, 52
	-.12	-.30	32.60***	696.49***	11,270	including outlier 9.1

(table continues)

Table 1 continued

Variable	Median	r_+	W	Q	n	Studies
Victim male child	.06	.11	11.12***	39.53**	10,294	1.2, 5, 9.1, 12.2, 18, 19, 20, 25, 26.1, 29.1, 32, 38, 39, 40, 43.1, 47, 48, 49, 52
Diverse sex crimes	.08	.10	7.95***	1.85	6,011	9.3, 17, 40, 43.1, 51
	.08	.11	8.58***	22.30	6,109	including outlier 1.2
Exhibitionism	.11	.09	6.48***	15.57	4,826	11.1, 19, 20, 23.1, 30.2, 32, 35, 40, 41, 44.1, 47, 48, 49, 52
	.10	.03	3.30***	49.59***	9,826	including outlier 9.3
Any adult male victims	.10	.09	4.54***	9.07	2,291	38, 39, 43.1, 48, 49
Victims children of both sexes	.04	.09	7.50***	52.51***	7,598	1.2, 9.3, 12.2, 19, 20, 32, 38, 39, 47
Rapist	.06	.07	8.44***	122.39***	15,181	2, 3, 5, 6.2, 7, 9.3, 11.1, 12.1, 17, 19, 25, 26.1, 30.2, 32, 36.2, 38, 39, 40, 42, 43.1, 44.3, 48, 49, 52, 53
Young child victim (versus older child)	.08	.05	1.97*	7.93	1,828	1.2, 19, 20, 29.1, 36.1 38, 39, 48, 49
Current sentence length	.05	.04	2.40*	14.98*	2,927	18, 20, 38, 39, 46, 49, 53
Degree of sexual contact	-.16	-.03	.96	25.17***	828	5, 6.1, 18, 23.1, 29.1, 32
Any child victims (child molesters)	-.05	-.03	3.76***	76.75***	13,683	2, 3, 5, 7, 9.3, 11.1, 12.1, 17, 19, 25, 26.1, 30.2, 32, 34, 38, 39, 40, 42, 43.1, 44.4, 47, 48, 49, 52

(table continues)

Table 1 continued

Variable	Median	r_+	W	Q	n	Studies
Force/injury to victims	.00	.01	.39	7.26	1,564	4, 6.1, 23.1, 29.2, 29.2, 39, 43.3, 51
	.02	.25	20.10***	172.68***	5,982	including outliers 9.1, 10
<u>Clinical Assessment Variables</u>						
Sex Crime Specific Variables						
Phallometric assessment - sexual preference for children	.20	.32	23.27***	36.79***	4,853	9.1, 29.1, 29.2, 36.1, 38, 43.5, 55.1
Deviant sexual preference	.20	.22	5.22***	1.11	570	6.1, 12.2, 26.2, 34, 43.2
Low motivation for treatment	.15	.15	10.66***	14.60*	5,149	1.2, 6.1, 9.1, 39, 50, 57, 58, 56
Phallometric assessment - sexual preference for boys	.15	.14	2.15*	.17	239	26.2, 36.1, 38
Deviant sexual attitudes	.09	.09	1.90	1.49	439	1.1, 6.1, 20, 38
	.08	.01	.24	15.68**	549	including outlier 5
Legally classified as MDSO	.03	.07	2.20*	20.03***	1,043	4, 25, 27
Phallometric assessment- sexual preference for rape	.00	.05	.95	2.03	320	26.2, 38, 43.4, 55.1
Empathy for victims	.03	.03	1.77	3.29	4,670	6.1, 9.1, 39
Length of treatment	.00	.03	1.34	.75	1,891	19, 24.1, 43.3, 54
Denial of sex offense	.03	.02	.46	2.29	762	5, 6.1, 26.2, 29.2, 39, 54
	.03	.16	11.19***	19.21**	5,143	including outlier 9.1
General Psychological Variables						
Severely disordered	.12	.25	3.39***	6.72*	184	10, 38, 39
Any personality disorder	.13	.16	2.78**	5.73	315	8, 38, 43.1
Antisocial personality disorder	.17	.14	4.10***	2.29	811	12.2, 12.3, 18, 38, 43.2, 55.1
	.16	.09	4.07***	6.41	2,113	including outlier 19

(table continues)

Table 1 continued

Variable	Median	r_+	W	Q	n	Studies
Anger problems	.10	.13	1.89	2.57	231	20, 38, 39
Low intelligence	.04	.09	6.44***	13.99	5,651	9.1, 18, 20, 24.1, 26.2, 29.1, 29.2, 39, 43.3
Cognitive impairment/brain damage	-.05	-.05	1.93	3.02	1,502	18, 19, 40
Depression	-.11	-.05	.68	2.66	219	5, 38, 39
Anxiety	.07	.04	.66	.24	226	20, 38, 39
Social skills	.04	-.04	.72	4.43	379	6.1, 12.2, 39
Any substance abuse problem	.07	.03	1.03	2.39	914	6.2, 36.2, 38, 40, 51, 56, 57
General psychological problem	.00	.01	.22	.25	655	5, 20, 26.2, 30.1, 38, 39
Alcohol abuse problem	.00	.00	.06	4.69	2,013	8, 12.1, 19, 30.1, 38, 39, 59
MMPI L - Lie	-.04	-.05	.96	6.34	393	20, 24.1, 39, 59
MMPI F - Infrequency	.00	.01	.17	.70	393	20, 24.1, 39, 59
MMPI K - Defensiveness	.02	-.03	.68	3.18	393	20, 24.1, 39, 59
MMPI 1 - Hypochondriasis	-.02	-.03	.61	.47	393	20, 24.1, 39, 59
MMPI 2 - Depression	-.01	.01	.22	2.39	393	20, 24.1, 39, 59
MMPI 3 - Hysteria	.04	.07	1.42	2.86	393	20, 24.1, 39, 59
MMPI 4 - Psychopathic deviate	.10	.10	1.87	2.45	393	20, 24.1, 39, 59
MMPI 5 - Masculinity-femininity	.17	.27	4.12***	4.73	239	20, 29.1, 59
MMPI 6 - Paranoia	.10	.16	3.19**	13.22**	393	20, 24.1, 39, 59
MMPI 7 - Psychasthenia	.05	.09	1.77	5.40	393	20, 24.1, 39, 59
MMPI 8 - Schizophrenia	.10	.09	1.70	2.73	393	20, 24.1, 39, 59
MMPI 9 - Hypomania	-.10	-.08	1.31	3.75	289	20, 24.1, 59
MMPI 0 - Social introversion	-.05	.11	1.98*	37.78***	393	including outlier 39
	.08	.00	.09	7.57	393	20, 24.1, 39, 59

Note. See Table 5 for a key to the studies used in each analysis.

*p < .05. **p < .01. ***p < .001.

Table 2

Predictors of Non-Sexual Violent Recidivism

Variable	Median	r_+	W	Q	n	Studies
Developmental History						
Juvenile delinquency	.20	.22	6.61***	1.88	906	6.1, 12.2, 37, 46
Demographic Factors						
Age	-.22	-.24	14.07***	22.06**	3,376	20, 26.1, 38, 39, 46, 49, 53
	-.16	-.22	13.35***	45.76***	3,530	including outlier 24.1
Single (never married)	.10	.10	3.75***	9.22	1,380	20, 38, 39, 46, 49
Married (currently)	-.07	-.10	3.53***	14.70**	1,380	20, 38, 39, 46, 49
Minority race	.16	.23	10.38***	11.21**	1,981	39, 46, 53
Non-sexual Criminal History						
Prior violent offenses	.21	.21	7.35***	1.64	1,203	12.2, 20, 24.2, 46, 49
	.22	.26	10.65***	16.95**	1,585	including outlier 38
Prior offenses (any/non-sexual)	.12	.11	7.43***	7.43	3,450	20, 24.2, 26.1, 38, 46, 49, 53
	.14	.14	8.42***	48.26	3,746	including outlier 39
Sexual Criminal History						
Rapist	.22	.23	14.84***	41.09***	4,040	12.1, 17, 24.2, 25, 16.1 38, 39, 44.3, 49, 53
Any child victims (child molesters)	-.17	-.16	8.62***	44.99***	2,742	12.1, 17, 24.2, 25, 26.1, 28.1, 39, 44.4, 49
Any adult male victims	-.11	-.13	3.87***	.78	898	38, 39, 49
Victim related child	-.12	-.12	4.99***	4.85	1,611	20, 25, 38, 39, 44.4, 49
Young child (versus older child)	-.08	-.11	2.90**	1.85	758	20, 38, 39, 49
Victim male child	-.09	-.09	3.13**	6.79	1,245	20, 25, 38, 39, 49

(table continues)

Table 2 continued

Variable	Median	r_+	W	Q	n	Studies
Current sentence length	-.02	-.02	.76	4.88	2,407	20, 39, 46, 49, 53
	-.01	.03	1.56	40.72***	2,788	including outlier 38
Prior sex offenses	.00	.02	1.04	8.01	4,300	6.2, 7.1, 12.2, 20, 38, 39, 46, 49, 53
Victim female child	-.05	-.02	.68	24.42***	1,847	20, 25, 26.1, 38, 39, 49
Victims children of both sexes	.01	-.02	.69	1.54	869	20, 38, 39
Clinical Assessment Variables						
Sex Crime Specific Variables						
Phallometric assessment - sexual preference for rape	.17	.03	.52	17.34***	290	26.2, 38, 55.1
General Psychological Variables						
Antisocial personality disorder	.18	.19	4.18***	1.98	494	12.2, 12.3, 38, 55.1
Anger problems	-.09	-.09	1.40	1.04	231	20, 38, 39
Low intelligence	.00	.07	1.72	8.48*	695	20, 24.1, 39
Alcohol abuse problem	.07	.07	1.33	.18	340	12.2, 38, 39
Anxiety	-.07	-.04	.60	2.33	229	20, 38, 39
General psychological problem	-.02	.00	.02	3.67	348	20, 26.2, 38, 39
MMPI L - Lie	.00	.01	.16	5.31	335	20, 24.1, 39
MMPI F - Infrequency	-.08	-.08	1.43	2.67	335	20, 24.1, 39
MMPI K - Defensiveness	.07	.11	2.07*	6.93*	335	20, 24.1, 39
MMPI 1 - Hypochondriasis	-.06	-.11	1.96	.81	335	20, 24.1, 39
MMPI 2 - Depression	-.09	-.07	1.31	11.26**	335	20, 24.1, 39
MMPI 3 - Hysteria	.00	-.05	.92	2.27	335	20, 24.1, 39
MMPI 4 - Psychopathic deviate	.08	.13	2.37*	2.62	335	20, 24.1, 39
MMPI 5 - Masculinity-femininity	-.09	-.10	1.82	4.81	335	20, 24.1, 39
MMPI 6 - Paranoia	.00	.00	.00	.07	335	20, 24.1, 39
MMPI 7 - Psychasthenia	.00	-.02	.34	.77	335	20, 24.1, 39

(table continues)

Table 2 continued

Variable	Median	r_+	W	Q	n	Studies
MMPI 8 - Schizophrenia	.00	-.01	.13	.02	335	20, 24.1, 39
MMPI 9 - Hypomania	.00	.02	.44	.99	335	20, 24.1, 39
MMPI 0 - Social introversion	-.15	-.16	2.93**	10.37**	335	20, 24.1, 39

Note. See Table 5 for a key to the studies used in each analysis.

*p. < .05. **p. < .01. ***p. < .001.

Table 3

Predictors of General Recidivism

Variable	Median	r_+	W	Q	n	Studies
Developmental History						
Juvenile delinquency	.20	.28	9.60***	15.03*	1,113	5, 6.1, 30.1, 37, 46
	.20	.20	8.07***	42.18***	1,574	including outlier 15
Negative relationship with mother	.14	.14	2.61**	1.13	350	20, 39, 55.2
Sexually abused as child	.00	.10	2.13*	6.71*	473	6.1, 20, 55.2
General family problems	.06	.07	1.73	4.50	698	5, 6.1, 30.1, 55.2
Negative relationship with father	.00	.02	.39	.94	335	20, 39, 55.2
Demographic Factors						
Age	-.18	-.16	14.28***	74.10***	8,250	5, 6.1, 11.1, 20, 30.1, 31.3, 36.1, 38, 39, 43.5, 46, 48, 49, 53
Single (never married)	.14	.11	7.50***	7.11	5,038	11.1, 20, 30.1, 31.3, 38, 39, 43.4, 46, 49
Minority race	.08	.10	5.15***	11.57*	2,919	6.2, 15, 37, 39, 46, 53
	.10	.14	7.91***	49.35***	3,358	including 11.1
Married (currently)	-.11	-.08	6.47***	28.37***	6,445	11.1, 15, 16, 20, 30.1, 31.3, 38, 39, 46, 49
Education	.00	.01	.37	1.97	914	15, 20, 39
Non-sexual Criminal History						
Admissions to corrections	.22	.25	7.33***	2.21	[illegible]	38, 43.5, 46
Prior offenses (any/non-sexual)	.25	.23	19.77***	52.63***	7,565	8, 11.1, 14, 15, 20, 25, 31.2, 33, 38, 39, 43.5, 44.1, 46, 49, 53
Prior violent offenses	.18	.20	6.83***	6.89	1,184	20, 38, 43.4, 46, 49

(table continues)

Table 3 continued

Variable	Median	r_+	W	Q	n	Studies
Sexual Criminal History						
Force/injury to victim	.11	.13	4.85***	.76	1,304	6.1, 16, 39
Prior sex offenses	.12	.12	11.75***	48.50***	8,975	5, 6.1, 7, 8, 15, 16, 20, 31.3, 36.2, 38, 39, 43.5, 46, 49, 53
Related child victim	-.16	-.12	9.81***	31.65**	6,735	2, 5, 8, 11.1, 15, 16, 18, 20, 25, 31.2, 36.2, 38, 39, 44.4, 49
Child molester	-.12	-.08	6.39***	72.62***	5,798	2, 5, 7, 11.1, 12.1, 16, 25, 30.1, 32, 38, 39, 44.4, 48, 49
Stranger victim (versus acquaintance)	.08	.07	1.52	2.92	465	5, 36.2, 39, 49
Any adult male victims	.03	.07	3.62***	14.33**	2,499	16, 38, 39, 48, 49
Rapist	.05	.05	5.94***	84.07***	14,753	2, 5, 7, 8, 11.1, 12.1, 16, 22, 25, 30.1, 31.2, 32, 36.2, 38, 39, 44.3, 48, 49, 53
Young child (versus older child)	-.02	-.03	.93	12.77*	1,056	20, 33, 36.2, 38, 39, 48, 49
Exhibitionist	.05	.04	3.31***	12.70*	5,467	11.1, 20, 30.1, 31.2, 32, 48, 49
Male child victim	.08	.03	1.98*	17.25	5,943	5, 18, 20, 25, 31.2, 32, 38, 39, 43.4, 48, 49
Sexual intrusiveness	-.08	-.03	.53	16.84***	438	5, 6.1, 23.2, 32
Victims children of both sexes	.01	.02	.72	8.88*	1,044	20, 32, 38, 39
Female child victim	-.08	-.01	1.11	53.04***	6,052	18, 20, 25, 31.2, 32, 33, 38, 39, 43.4, 48, 49
Sentence length	.01	.00	.13	1.13	1,034	20, 39, 46, 49
	.04	.08	3.09**	24.48***	1,415	including outlier 38

(table continues)

Table 3 continued

Variable	Median	r_+	W	Q	n	Studies
Clinical Assessment Variables						
Sex Crime Specific Variables						
Motivation for treatment	.16	.14	4.47***	11.49	983	6.2, 30.1, 39, 45, 50, 56, 58, 60
Alcohol use during offense	.00	.12	4.48***	16.04***	1,395	15, 16, 20
Denial of sex offense	.23	.12	2.37*	12.76**	408	5, 6.1, 39
Phallometric assessment - sexual preference for children	.19	.11	1.68	5.93	233	36.1, 38, 55.1
Legally classified as MDSO	.04	-.10	3.38***	15.36***	1,053	4, 25, 27
Previously failed treatment for sexual offense	-.04	-.07	2.62**	4.71	1,380	16, 39, 13
Deviant attitudes toward sex	-.03	.06	1.04	1.94	338	6.1, 20, 38
	-.04	-.01	.28	8.62*	448	including outlier 5
Clinical Assessment Variables						
General Psychological Variables						
Any personality disorder	.22	.21	3.53***	4.63***	273	8, 38, 43.5
Antisocial personality disorder	.23	.16	10.38***	9.27	3,977	6.1, 12.3, 18, 32, 38, 55.1, 13
Alcohol abuse problem	.13	.11	6.80***	3.46	3,552	8, 32, 38, 39, 59
Anger problems	.11	.09	1.41	2.44	231	20, 38, 39
Anxiety	.08	.07	1.01	1.49	226	20, 38, 39
Severely disordered	.03	.03	1.52	1.59	3,332	32, 38, 39
Any substance abuse problem	-.03	-.01	.25	5.29	422	6.1, 36.2, 38
General psychological problem	-.03	.01	.13	5.51	306	5, 20, 38, 39
Depression	-.01	.00	.06	2.30	219	5, 38, 39
Low intelligence	.01	.00	.15	6.27	5,004	15, 20, 32, 48
	.00	-.01	.86	15.54**	5,274	including outlier 39

(table continues)

Table 3 continued

Variable	Median	r_c	W	Q	n	Studies
MMPI L - Lie	.04	-.02	.25	1.26	239	20, 39, 59
MMPI F - Infrequency	.01	.02	.30	1.47	239	20, 39, 59
MMPI K - Defensiveness	.12	.01	.11	6.54*	239	20, 39, 59
MMPI 1 - Hypochondriasis	-.10	-.07	1.09	1.38	239	20, 39, 59
MMPI 2 - Depression	.00	-.03	.51	.73	239	20, 39, 59
MMPI 3 - Hysteria	-.05	-.07	1.06	.36	239	20, 39, 59
MMPI 4 - Psychopathic deviate	.09	.10	1.52	.82	239	20, 39, 59
MMPI 5 - Masculinity-femininity	.02	.04	.53	.39	239	20, 39, 59
MMPI 6 - Paranoia	.05	.06	.89	.84	239	20, 39, 59
MMPI 7 - Psychasthenia	.09	.09	1.35	.45	239	20, 39, 59
MMPI 8 - Schizophrenia	.04	.02	.26	4.08	239	20, 39, 59
MMPI 9 - Hypomania	-.02	.09	1.34	11.56	239	20, 39, 59
MMPI 0 - Social introversion	-.01	-.03	.39	1.56	239	20, 39, 59

Note. See Table 5 for a key to the studies used in each analysis.

*p < .05. **p < .01. ***p < .001.

Table 4

Combined Risk Scales

Variable	Median	r_+	W	Q	n	Studies
Sexual Recidivism						
Clinical assessment	.04	.10	3.81***	16.10	1,453	5, 6.1, 21, 25, 27, 36.2, 39, 43.5, 51, 54
Statistical	.44	.46	12.19***	15.06**	684	1.2, 5, 12.2, 20, 29.2, 43.1
Non-sexual Violent Recidivism						
Clinical assessment	.06	.06	1.51	1.10	544	24.1, 25, 39
Statistical	.45	.46	9.01***	.65	343	12.2, 20, 24.1
General Recidivism						
Clinical Assessment	.11	.14	4.69***	17.81**	1,067	5, 6.1, 13, 21, 25, 27, 36.2, 39
Statistical	.42	.42	9.38***	.87	453	5, 13, 20, 43.4, 43.6

Note. See Table 5 for a key to the studies used in each analysis.

**p < .01. ***p < .001.

Table 5

Key to Studies Used in Meta-analysis

Number in tables	Study
1.1	Gore (1988)
1.2	Abel, Mittelman, Becker, Rathner, & Rouleau (1988)
2	Gordon & Bergin (1990)
3	Graham (1991)
4	Frisbie (1969)
5	Smith & Monastersky (1986)
6.1	Schram, Milloy, & Rowe (1991)
6.2	Kahn & Chambers (1991)
7	Gordon & Porporino (1990)
8	Tracy, Donnelly, Morgenbesser, & MacDonald (1985)
9.1	Maletzky (1993)
9.2	Maletzky (1980)
9.3	Maletzky (1991)
10	Hackett (1971)
11.1	Broadhurst & Maller (1992)
11.2	Broadhurst & Maller (1991)
12.1	Prentky, Knight, & Lee (1994)
12.2	Prentky, Knight, & Lee (1995)
12.3	Prentky, Knight, Lee, & Cerce (1995)
13	Wormith & Ruhl (1987)
14	Nutbrown & Stasiak (1987)
15	Pacht & Roberts (1968)
16	Motiuk & Brown (1993)
17	Grûnfeld & Nôreik (1986)
18	Fitch (1962)
19	Frisbie & Dondis (1965)
20	Hanson, Steffy, & Gauthier (1993b)
21	Florida Department of Health and Rehabilitative Services (1984)
22	Beck & Shipley (1989)
23.1	Mair & Wilson (1995)
23.2	Mair & Stevens (1994)
24.1	Hall (1988)
24.2	Hall & Proctor (1987)
25	Sturgeon & Taylor (1980)
26.1	Marques, Day, Nelson, & West (1993)
26.2	Marques, Nelson, West, & Day (1994)
27	Dix (1976)

(table continues)

Table 5 continued

Number in tables	Study
28	Marshall (1994)
29.1	Marshall & Barbaree (1988)
29.2	Barbaree & Marshall (1988)
30.1	Meyers & Romero (1980)
30.2	Romero & Williams (1983)
31.1	Stürup (1961)
31.2	Stürup (1960)
31.3	Christiansen, Elers-Nielson, Le Maire, & Stürup (1965)
32	Stürup (1953)
33	Bluglass (1980)
34	Rooth & Marks (1974)
35	Weaver & Fox (1984)
36.1	Malcolm, Andrews, & Quinsey (1993)
36.2	Khanna, Brown, Malcolm, & Williams (1989)
37	Doshey (1943)
38	Proulx, Pellerin, McKibben, Aubut, & Ouimet (1995)
39	Reddon, Studer, & Estrada (1995)
40	Meyer, Cole, & Emory (1992)
41	Mohr, Turner, & Jerry (1964)
42	Vermont Treatment Centre for Prevention and Treatment of Sexual Abuse (1991)
43.1	Quinsey, Rice, & Harris (1995)
43.2	Quinsey, Lalumière, Rice, & Harris (1995)
43.3	Quinsey, Rice, & Harris (1990)
43.4	Rice, Harris, & Quinsey (1990)
43.5	Rice, Quinsey, & Harris (1989)
43.6	Rice, Quinsey, & Harris (1991)
43.7	Rice & Harris (1995)
44.1	Gibbens, Soothill, & Way (1978)
44.2	Soothill, Jack, & Gibbens (1976)
44.3	Gibbens, Soothill, & Way (1980)
44.4	Gibbens, Way, & Soothill (1977)
45	Perkins (1987)
46	Bonta & Hanson (1995)
47	Federoff, Wisner-Carlson, & Berlin (1992)
48	Radzinowicz (1957)
49	Thornton (1995)
50	Hall (1995b)
51	Epperson, Kaul, & Hout (1995)
52	Wing (circa 1984)

(table continues)

Table 5 continued

Number in tables	Study
53	Song & Lieb (1995)
54	Ryan & Miyoshi (1990)
55.1	Gretton, McBride, & Hare (1995)
55.2	McBride, Gretton, & Hare (1995)
56	Lab, Shields, & Schondel (1993)
57	Money & Bennett (1981)
58	Pierson (1989)
59	Davis, Hoffman, & Stacken (1991)
60	Smiley & Mulloy (1995)
61	McConaghy, Blaszczynski, Armstrong, & Kidson (1989)

Note. Studies sharing the same integer were based on a common data set.